



FRIDAY, NOVEMBER 12.

Car Service Matters at the General Time Convention.

The committee appointed at the last convention of the Car Accountants' Association (Messrs. F. J. Hoyle, E. C. Spalding, C. P. Chesebro, J. G. Hunt and W. A. Moody), and instructed to submit to the Time Convention such measures wherein a uniformity of action of all railways was desired, presented the following subjects for consideration at the meeting held at New York, Oct. 13:

"1. *Record of Switch Cars*: At annual meetings held in Boston, 1882; Philadelphia, 1883; Richmond, 1884, and Buffalo, 1886, it was the sense of the Association that a record of all cars switched to connections should be kept, and that a junction report of such cars be sent to owners. On account of certain roads failing to report these cars records were rendered incomplete, and an intelligent and prompt location of cars prevented.

"2. *Reported Mileage of Line Cars*: At Minneapolis in 1885, and at Buffalo in 1886, resolutions were adopted embodying the following: That the mileage of the cars of each road in line service be reported as a separate item as requested by managers of lines, but that the elaborate system of reporting separate series of cars as now exacted, be discontinued. Additional expense in clerical labor is required in the matter of reporting mileage of line cars under the present system, and this, we believe, could be obviated by the simpler method.

"3. *Uniform Rate of Passenger Car Mileage*: At the Buffalo meeting in June, 1886, it was recommended that a uniform rate of passenger car mileage would be advisable for "wild cars" and cars not affected by traffic arrangement, and the following rates were suggested: For coaches, 3 cents per mile; postal cars, 2 cents; baggage and express cars, 1 cent.

of copper wire for each 16 candle-power lamp, by the 'three-wire system,' is \$150 for a distance of four miles, while by the new system this cost is only \$1.50. And instead of 850 lamps, as stated in the dispatch, there were 1,000 lamps lighted to their full candle-power on a six-mile circuit, the lamps being three miles from the dynamo; the current was carried by a copper wire main less than 1/4 in. in diameter; and for each indicated horse-power of the engine, a fraction of over eight lamps of 16 candle-power each was obtained. Furthermore, the armature for a machine capable of producing a current for 1,000 such lights requires in its construction only 30 pounds of copper wire, while for the Thomson-Houston armature, having only one-quarter of this capacity, 225 pounds of copper wire are necessary.

"By this new system two dynamos driven by separate engines are made to deliver their currents to the same wire. This is accomplished perfectly and with the most simple expedients. Without the slightest interruption or inconvenience to the service, the dynamos can be connected or disconnected at pleasure, and the power regulated so that even nine-tenths of the lights may be cut off or put on without affecting the remaining ones; and at the same time a small switch, which would be capable of turning off only 30 small lamps of the old plan, easily cuts off the entire current of the main wire by the new system. Eminent electricians have long considered it impracticable, if not impossible, to successfully deliver to the same wire alternate currents from two or more dynamos, driven by separate engines. It is now accomplished, and in the most perfect manner. This system involves the use of alternate high-pressure currents, the alternations being at the rate of 15,000 per minute, which are locally reconverted into low-pressure currents, so capable of modification that the lights can be turned up or down, as may be desired."

"Who is the inventor of this system?"
"Well, it is the result of a series of careful and, I may add, costly experiments which have been quietly carried on in this city for the past two years by the Westinghouse Electric Co., and which have but just been perfected. Another benefit in the system arises from the fact that it is no longer necessary to locate electric light plants near the centre of illumination, where property is always costly, and where the noise of machinery is more or less objectionable. They may now be located in the outskirts or farther away,

heavy, smaller lumps were probably blown out during the same trip?

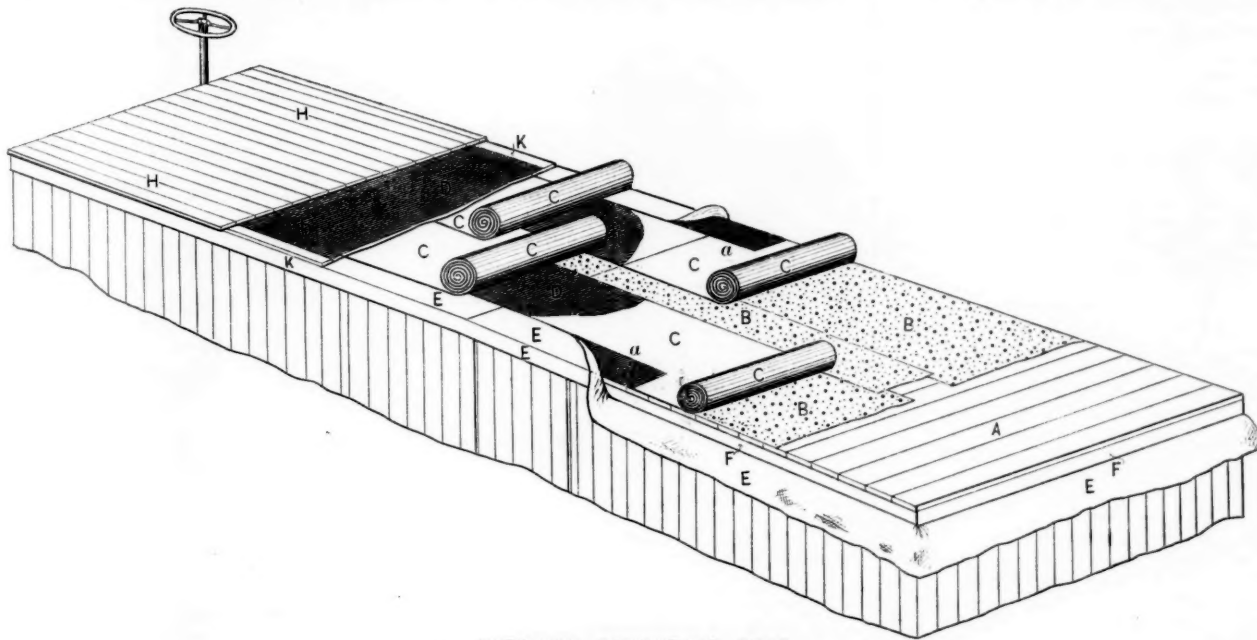
The train was a very fast and rather heavy one (eight cars, if recollection serves), and was probably at the time making fully 60 miles an hour. The lump is anthracite. It apparently never touched the bed of the fire, but was taken up by the fierce draft as it was thrown in, or cracked off a large lump, without further change from the heat than a slight ignition of a few salient angles, a dulling of part of the surface, and a few surface cracks plainly caused by the heat.

Hutchins' Freight-Car Roof.

The accompanying engraving represents a new style of freight car roof invented by Mr. C. B. Hutchins, of Detroit, Mich. The roof presents many novel features, is unique, practical and cheap in its construction, and car-builders will be interested in looking into its merits.

Its object is to do away with ribs and carlins and utilize the space taken up by them and at the same time make a practical and desirable roof.

There is a pitch of 3 in. from the centre to the ends of the plates. The top is then covered transversely with matched plank from plate to plate, spiked to the plates securely at both ends with 6-in. wire nails. Upon this matched planking is applied three layers of water-proof felt with intervening layers of the Hutchins roofing compound, as shown in the cut. Canvas is nailed on the plates and ends of the car a little below the ends of the matched planking, which is brought up over and nailed down some 15 inches from edge, and upon the whole top is laid a coating of the roofing compound. Upon this roofing compound are placed the covering boards laid lengthwise, with broken joints which bring them at right angles with the transverse planking.



HUTCHINS' FREIGHT-CAR ROOF.

We believe this would expedite the settlement of mileage accounts and avoid the necessity of special instructions in the future.

"It is believed that a general conformity to these suggestions will prove beneficial to the car record offices, and consequently to the roads in whose interests they are conducted."

A deep interest was manifested in car service matters by the members of the Convention, and the wish was expressed that all of the important questions which were under consideration should be intelligently presented, that through their co-operation the end to which the Car Accountants' Association labored—uniformity and the adoption of progressive measures—might be accomplished. The following committee was appointed to investigate and report at their next semi annual meeting: Messrs. C. H. Hudson, East Tennessee, Virginia & Georgia; S. M. Prevost, Pennsylvania Railroad; T. E. Clarke, Minneapolis & St. Louis; E. Gallup, Boston & Albany; T. W. Burrows, Indianapolis & St. Louis.

The Westinghouse Electric Light Company.

Mr. George Westinghouse appears not to be satisfied with the part which he has taken in inventing and introducing the automatic brake, the Westinghouse engine, interlocking signals, natural gas, and a number of other less conspicuous advances on past practice, but is now taking what promises to be the leading part in the introduction of electric lighting, if we may believe the reports of an interview with him which appear in the *Pittsburgh Dispatch*. The Electric Light Company is stated to have, within the past few months, put in 1,000-light plants at Trenton and Plainfield, N. J.; Keokuk, Ia.; Oswego, N. Y., and several other places, and to have now orders on hand for plants from a dozen to twenty towns and cities, so that branch establishments will be put in at Chicago or St. Louis for supplying the Northwest and South-west.

The invention and its consequences are thus described by Mr. Westinghouse:

"A veritable revolution in lighting must necessarily follow our recent patents, as we have perfected plans for introducing our plant into every city and borough in the United States. Illuminating gas, with its discomforts and disadvantages, must now become a thing of the past, and adequate light can be had at a fair cost.

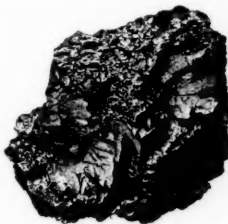
The advantages in the cost of the plant are understated in your dispatch of this morning. A more striking illustration of this advantage is contained in the fact that the cost

where steam-power may be cheaply produced or water-power made available, or may be placed on a part of the property occupied by the plants of illuminating gas companies."

Coming from any one but a man who has already accomplished so much, such statements would excite some natural incredulity. As it is, we can only look with the greatest interest to see what will result.

A Large Sized Cinder.

The "cinder," which is faithfully reproduced to its exact natural size in the accompanying illustration, is one which was blown from the smoke-stack of a fast passenger locomotive of the West Shore Railroad which was hauling the special train of the American Society of Civil Engineers to the Buffalo Convention in June, 1885. It came in through the window of the smoking car at the head of the train and was picked up, still hot and smoking at the corners, by Mr. Clark



A Large-Sized Cinder.

(Lump of coal blown from locomotive smoke-stack, West Shore Railroad; natural size).

Fisher, of that society, by whom it was handed to the writer in the same condition. It has ornamented the past two years and still ornaments his desk, but as it may fairly claim to be among the largest "cinders" on record, it seemed worthy of reproduction by engraving, not only as a curiosity, but for the moral it is calculated to convey. Of course it can only be by a rare chance that so large a lump can find its way out intact, but how many, and in the aggregate how

The various parts of the roof are lettered as follows on the illustration: A, lower course of 2-in. boards; B, dry felt; C, saturated felt; D, roofing compound; E, drilling; F, cornice; H, complete roof; K, wooden strips; a, roofing compound.

The Michigan Central, to test the utility of cars constructed with such a roof, built 50 furniture cars equipped with this roof last spring, and they were in great demand by furniture, wagon and wooden-ware men from the start, and to meet the demands for them they are now constructing 51 more.

These cars of the Central are as smooth inside as the ceiling of a room, and there is not even a bolt in sight to injure the class of goods they are intended to carry. It is claimed that a car constructed with this roof is especially adapted for cattle and horses and all kinds of merchandise, and that possesses the following advantages:

It makes a strong, cheap and durable roof. No gains are cut in the tops of the plates; there is a clear packing space to the roof of the car: no dripping of water over doors while transferring merchandise or grain; perfectly safe for trainmen, and nothing but cheap, lumber used in the construction.

Brake-Gear for Consolidation Locomotives—American Brake Co.

However much or little one may like the car brake-gear of the American Brake Co., we think no one will be disposed to question that in the brake-gear for Consolidation engines illustrated herewith they have brought out a tolerably good and workmanlike device, possessing many points of merit. Although primarily designed for Consolidation engines, it is, of course, equally applicable to engines with 3, 5 or any other number of drivers, by slight changes of details.

In our issue of Sept. 3, 1886, we illustrated another Consolidation driver-brake, in use on the Chicago, Burlington & Quincy Railroad, having a certain general resemblance to this, but also many points of difference. Comparison between the two is interesting and on the whole appears to be decidedly in favor of this device.

In the first place, there is but one brake-beam in this de-

vice, and that in front of the front drivers, instead of four, thus leaving the under side of the engine entirely unobstructed—an advantage of no little moment. In the second place, there are no fixed fulcrums, whereas in the other gear there were eight. In the third place, the use of horizontal instead of vertical equalizing levers brings the whole gear high above the rails, whereas in the other device the lower end of the equalizing levers are only 3 or 4 in. above the rail, thus coming in good position to cause a general smash-up of the brake-gear should the engine be derailed.

As a natural consequence of these differences there are fewer parts to this brake gear, viz., 89 against 102, if our rough count be correct. The provision for taking up slack and wear seems also a very neat one; much more readily accessible and more simply worked than the right-and-left turn-buckle behind the rear drivers of the Chicago, Burlington & Quincy brake-gear, to which we objected in describing it, although we judged the brake gear as a whole to be the best which had appeared up to that time. A much greater range of adjustment is provided for in the drawings herewith, however, than seems at all necessary.

It will be seen that it is a matter of comparative indifference how closely spaced the wheels are and that equality of pressure is assured under all conditions of unequal wear. The simple way in which a limited amount of play is allowed to the brake-shoes is also notable, and the convenience of the gear for repairs in case of breakage.

It is, of course, a matter of indifference whether steam or air cylinders supply the braking power, nor does the company restrict it to use with their steam apparatus. In fact, it has been already applied to a number of engines, using both air and steam, and ordered for a still larger number, and we hear it very highly spoken of.

Gold's System of Heating Cars.

The accompanying illustrations represent the apparatus used on the Manhattan Elevated and other railroads for heating cars. The danger of heating cars by stoves has often been brought prominently into notice by frightful disasters. In the Rio disaster, on the Chicago, Milwaukee & St. Paul, it would appear that the loss of life may have been solely due to the train catching fire through an overturned stove.

As the train was evidently running at very high speed, and was derailed almost as soon as the brakes could be applied, it thus appears that an ordinary stove when upset is more dangerous to life than an express train derailed at full speed. This is a grave reflection upon the common method of car heating and shows that radical change is much wanted. The train would not have left the rails at Rio had proper switches or proper signals been in use; but even with the imperfect appliances used there, loss of life would probably have been prevented by a safe system of car heating.

The Gold system is based on the utilization of the heat in steam conveyed from the engine, and therefore requires no fire in any car.

It is important in any system of heating to have a constant supply of heat, so as to maintain an equable temperature. In heating cars directly with live steam from the locomotive this is somewhat difficult to accomplish, as the live steam can with difficulty be spared during the ascent of grades, and consequently the steam is generally admitted to the heating pipes only during the descent of grades, and the supply of heat is therefore intermittent.

This difficulty can only be overcome by storing heat in the car, and the most obvious and convenient method is by placing a reservoir of hot water in the car. Water, weight for weight, will contain a larger number of heat units than any other substance, and holds the same superiority over most known materials when compared volume for volume.

In the Gold system of heating cars the reservoirs which contain the water for storing the heat are constructed as shown in figs. 3 and 4. A wrought-iron cylinder, A, is filled with a strong solution of common salt to about seven-eighths its capacity. This leaves plenty of room for its expansion when heated, so that no undue strain is caused upon the apparatus by heating. This reservoir is hermetically sealed, and the solution is thereby maintained at a constant strength, proof against freezing and never needing to be replaced.

The reservoir is supported in a wrought-iron cylinder of somewhat larger diameter, upon small supports at the bottom, which leave an annular space wider at the bottom and gradually narrowing at the top in cross-section, as shown at C, in fig. 4.

This inclosing cylinder is provided with caps D, so adjusted as to leave plenty of room for longitudinal expansion of the reservoir A, in the interior of the inclosing pipe.

In the caps at the lower part of the same are openings, E, into which the steam pipes are screwed, so that steam may pass in either direction into the apparatus, and pass freely out at the opposite end, together with the water which has condensed during its passage. The steam being thus applied to the outside of the water-containing reservoir A, instead of being applied centrally through a small pipe as heretofore, gives a very much larger steam-heating surface. In the short space of time during which a locomotive stops at a station, there is sufficient steam heating surface to adequately heat the solution in the reservoir A, when steam is supplied to the space between the reservoir and its inclosing cylinder. As no strain can arise from expansion, no leaks can be so caused, and no expansion joints are needed.

A usual size of these heaters has been, for ordinary passenger cars, inner reservoir $3\frac{1}{2}$ in. in diameter, the outer cylinder being 4 in. in diameter, and 10 ft. 10 in. in length, the length varying according to circumstances.

The application of steam in the manner described enables the outer cylinder or pipe to instantly and powerfully radiate

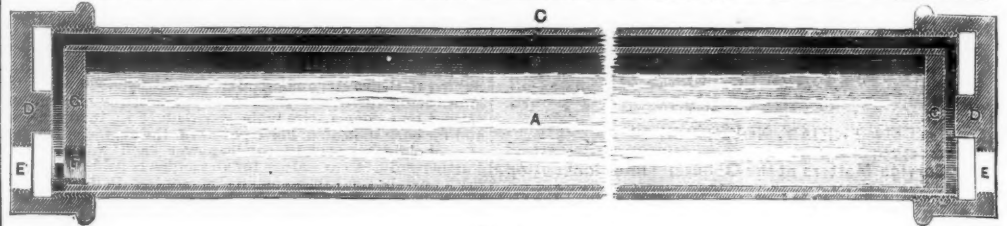


Fig. 3.
The Radiator.

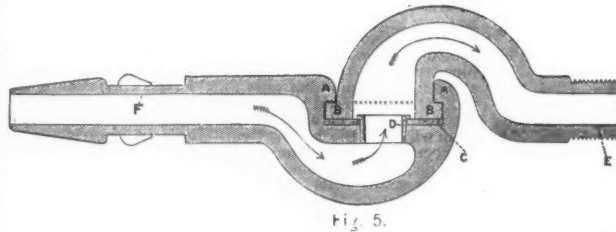


Fig. 5.

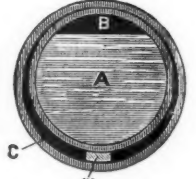


Fig. 4.

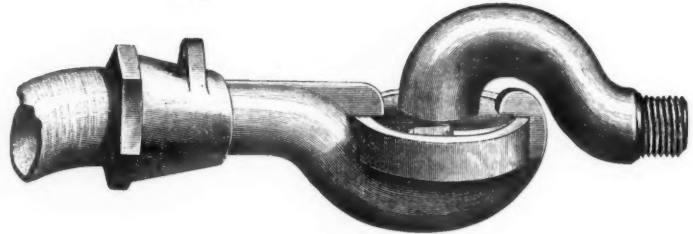


Fig. 6.
The Coupling.

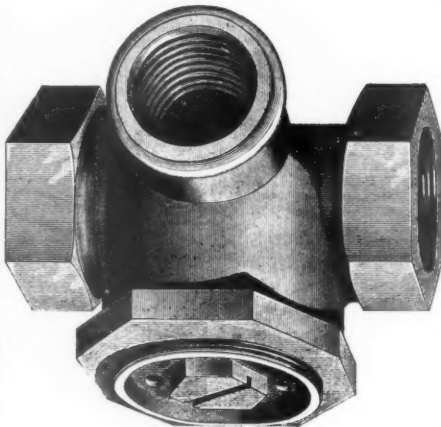


Fig. 7.

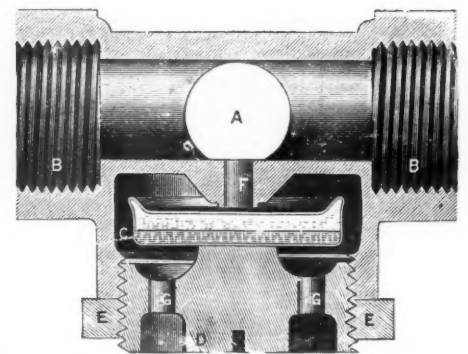


Fig. 8.
Steam Trap.

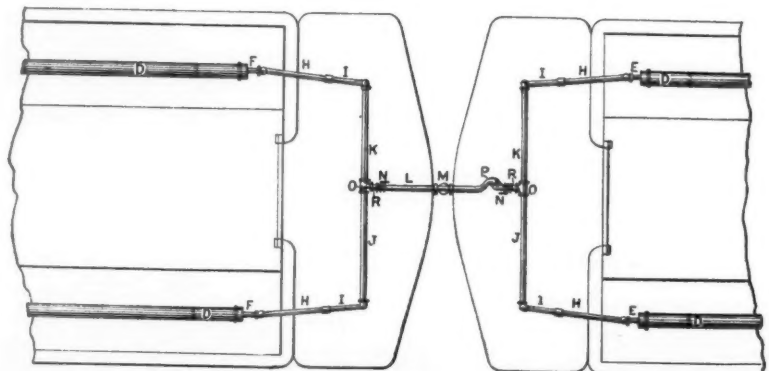
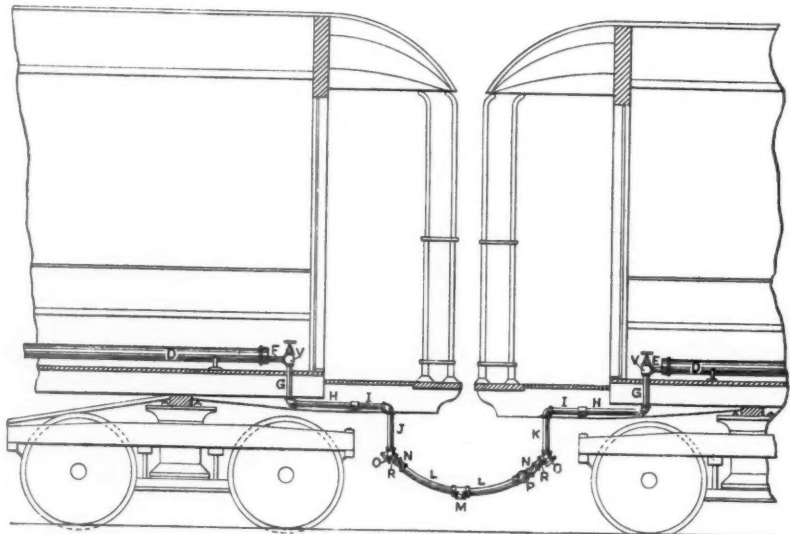
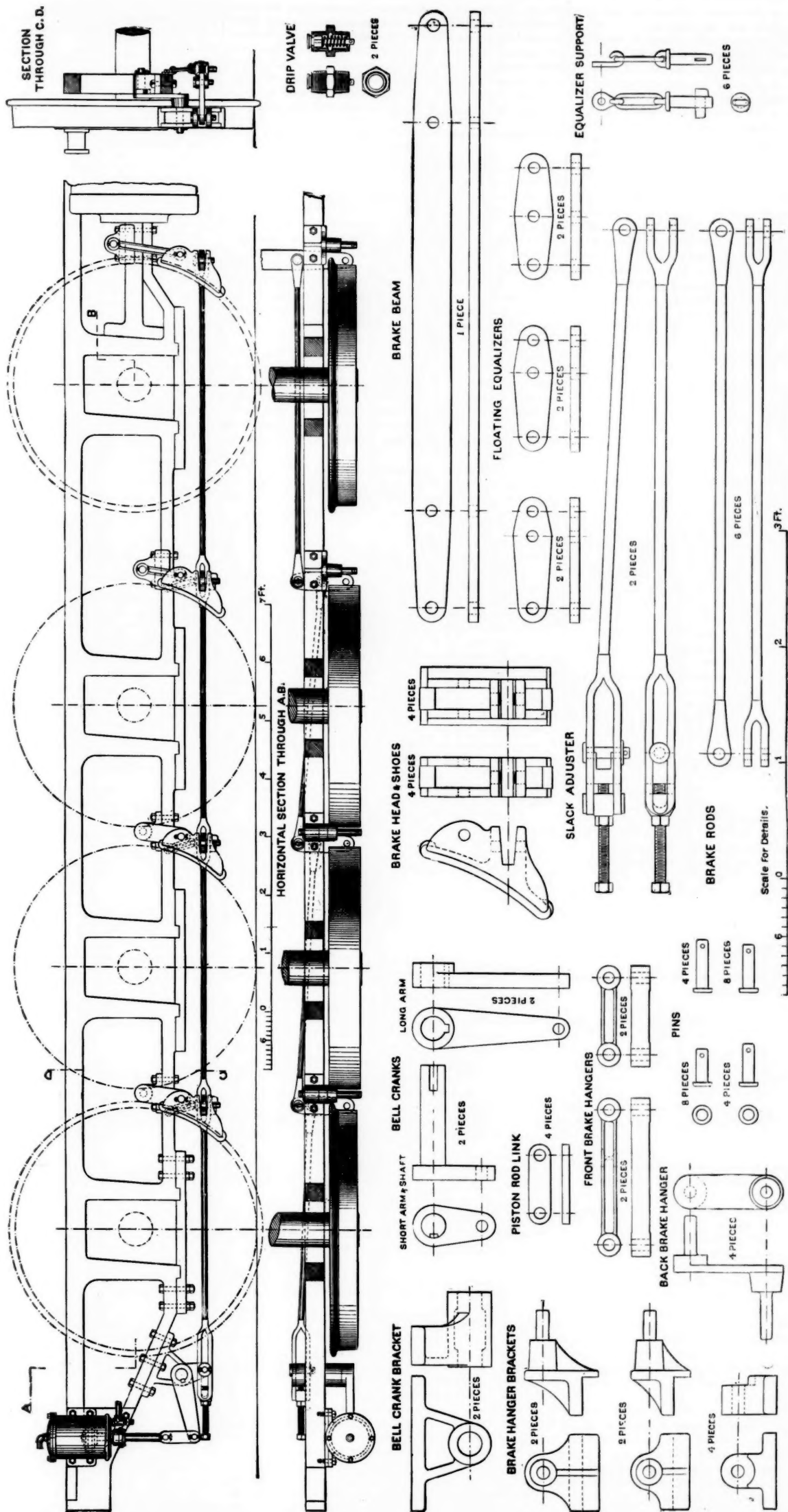


Fig. 2.—General View.

GOLD'S SYSTEM OF HEATING CARS.



heat to the apartment to be warmed, while at the same time the reservoir *A* is absorbing heat for future use.

Figs. 1 and 2 represent the system as applied to suburban or rapid transit cars with longitudinal seats. In main line cars with the ordinary transverse seats, the heaters or radiators *D* would be placed close against the truss-plank. In other respects the arrangement would be very similar. The steam passes from car to car through the pipes *F, H, I, K* and the hose pipe *L, L*, which is coupled to the next car at *P*. The coupling is shown in detail in figs. 5 and 6. Stop valves are provided at *V* at the end of the radiators, so that steam can be shut off from one side of the car in moderately cold weather. Stop valves are also provided at *N*, so as to shut off steam from the whole car. Traps for the condensed water are provided at the lowest point of the pipes at each end of the car, and a trap *M* is also provided at the lowest point in the hose. The trap for the escape of condensed water is shown in detail in figs. 7 and 8. The hose and the entire system of pipes are thus kept entirely drained of water, and consequently no trouble can arise from the pipes being obstructed or burst by ice. The pipes underneath the car should be felted to prevent useless radiation of heat.

The following is a detail reference to the parts shown in figs. 1 and 2:

- D.* Car heater or radiator, 4 in. dia.
- E.* 1 in. nipple.
- F.* 1 in. nipple.
- G.* 1 in. nipple through bottom of car.
- H.* Piece of 1 in. pipe.
- I.* Piece of 1 in. pipe.
- J.* Piece of 1 in. pipe, bent.
- K.* Piece of 1 in. pipe, bent.
- L.* 1 in. hose, five-ply.
- M.* Union trap at lowest point of hose.
- N.* 1 in. steam stop-cocks.
- O.* Gold's 1 in. Tee trap, iron body, at lowest point of pipe.
- P.* Gold's patent hose coupling.
- R.* Short 1 in. nipples.

The arrangement of pipes, flexible hose, water-traps for removing condensed water, and couplings is the same at each end of the car. Steam consequently can be admitted at either end, as it will be discharged at the other end.

The coupling employed is shown in plan in elevation in fig. 6 and in section in fig. 5. It is very simply coupled, and tends to tighten by the motion and jarring of the train. As the ends, however, are male and female, it is best suited for lines where individual cars are not liable to be reversed. Any difficulty on this score might, however, be easily overcome by the use of two lines of hose.

Figs. 7 and 8 are respectively elevation and section of the trap used to get rid of the condensed water. It is very small, occupying little more space than an ordinary check-valve, but it is claimed that it acts perfectly, allowing all condensed water to escape, and closing instantly when live steam reaches it.

The main principle of the trap is the use of a hollow expansion disk having thereon a valve-face which closes upon its seat by expansion whenever it is subjected to the temperature of live steam, and which contracts as soon as the temperature falls below the temperature of live steam and opens the valve. This hollow disk is filled with a composition which is highly expandable at the temperature of live steam, and is so sensitive that it contracts very rapidly at points below that temperature.

This heater has been used on the Manhattan Railway for four winters, and is in use also on the Staten Island Rapid Transit Railroad, being applied in all on about 800 cars. It is also used on the Hoboken cable road and on the Suburban Rapid Transit in New York, and in Wyandotte, near Kansas City.

As first used on the Elevated, the pipes were placed too low, and the guard rails, etc., projected too high to allow of a water-trap being placed in the lowest point of the hose. Consequently, when the cars were left standing all night, the water accumulated in the lowest point in the hose, and freezing prevented any circulation of steam when the engine was coupled to the train in the morning. The result was that passengers complained that some of the cars were cold, while others in the same train were well heated. This trouble has not occurred since the trap was introduced in the lowest point of the hose, as well as in the lowest point of the pipes at each end of the car.

The whole apparatus is tested to 350 lbs. per square inch, and therefore is amply capable of standing the full working pressure of steam. The pressure is regulated by a valve on the locomotive operated by the engineer.

It is claimed that about 30 lbs. of steam per hour will heat a car. As this quantity of steam should be raised by the consumption of 4 lbs. of coal, it would appear that a train of eight cars could be heated by about 32 lbs. of coal per hour. The steam used for heating would, however, probably be wasted at the safety valves were no heating apparatus in use. The consumption of coal, therefore, expressly for heating need not be large. It is claimed that the cars can run for two hours without receiving any steam from the engine, the salt water in the radiator giving out sufficient heat to keep the cars warm. There are few grades that cannot be surmounted by a passenger train in less than two hours, and while running down grade most engines can well afford to spare some surplus steam.

The Gold system of car heating appears to possess the merits of simplicity and safety, and deserves more attention from the managers of our great lines than it has hitherto received. Its first cost is, we understand, greater than that of stoves, but it would certainly appear to possess several merits to offset its greater cost. From the foregoing description, it is pretty evident that it would require less attendance than stoves, would heat a car more equably, and take up less useful space in the car. All these are points which deserve careful consideration, especially when they are combined with

safety. Experience in actual running on main-line trains would show whether the cost of maintaining hose and valves was an item large enough to outbalance some diminished cost of running in the items specified above. The question of safety should, however, be paramount, and it would be worth while to incur a possibly greater cost in running, especially when there is a strong probability that the safer system is the cheapest in running, though the dearer in first cost.

Burlington Brake Tests—Comparative Absolute Efficiencies

We give in the two accompanying tables, which close our reports of the Burlington tests, percentages which furnish by far the best means for comparing the performance of brakes in respect to efficiency, viz., the ratio which the retarding force developed by the brakes bears to the load on the wheels to which the brakes were or were supposed to have been adjusted. A comparison on this basis is absolute and universal. Whatever the speed, whatever the grade, whatever the weight and length of train or the unbraked load in it, we have in these ratios or percentages a strictly fair and equitable basis for comparing any stop with any other stop, in respect to efficiency. By no other unit of comparison is it possible to do this.

The method used for computing these percentages was given in full in our issue of May 15, 1885. By the quite unnecessarily tedious method which is ordinarily used for computing brake efficiency, it would have been an almost unending labor to have computed efficiency for so many different stops as appear in the table herewith, and accordingly it is seldom done; but by the method referred to it involves no great labor.

We need not repeat the details of the process further than to say that it rests upon the fact that a body moving through space in any direction at a given velocity has in it a certain fixed amount of energy which is sufficient to lift it through a given vertical height, viz., that through which the body would have to fall freely to acquire this velocity. A train moving along the rails with steam shut off, will (except for the loss of force by its rolling friction) continue running until this "vertical head" has been exhausted by the rise of grade, and then come to a stop. The same physical experiment is repeated incessantly by a pendulum. The brakes of a train (and the rolling friction combined) destroy in the total length of the stop (1) this "vertical head" and (2) the effect of the fall of grade, if any. The sum of these two in feet (or the difference, if the stop is on an up grade) divided by the length of the stop gives the "grade of retardation." Subtracting from this rate of grade corresponding to the estimated rolling friction of the train, and dividing the remainder by the per cent. of the total weight of the train which had brakes applied to it, we get the percentages of efficiency given in the accompanying table.

As the meaning of these percentages might not be entirely clear to every one, however, we have put them in the second part of the table in what is really only another form, viz., the distance in which a train having its entire weight braked and moving at 20 miles per hour on a level would be stopped by brakes acting with the given per cent. of efficiency. This distance is determined by the simple process of dividing 14.20 ft.—the "vertical head" corresponding to a velocity of 20 miles per hour—by the given per cent. of efficiency.

We have discussed some of the leading indications of the table in another column.

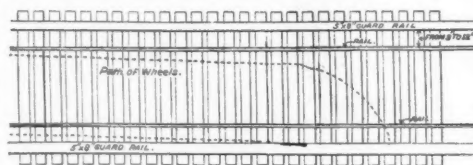
Contribution.

Wooden Guard Rails on Bridges.

MERIDIAN, Miss., Oct. 28, 1886.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The communication in your issue of the 22d inst. on "An Accident Prevented by Re-railing Safety Frogs," and your comments on the subject in another column, lead me to seek your opinion regarding the wooden "guard rail" as generally used on bridges and trestles. What benefit is derived from its use? As a guard against wheels leaving the cross-ties in case of a derailment it is undoubtedly a farce, and I know of some practical bridge engineers who con-



demn its use, and, I think, with good reason. No less than four or five cases have come under my own observation where a (say 5 x 8 in.) guard rail, placed 9 in. from outside of rail, has been the undoubted means of at least hastening, if not causing wrecks, by slewing derailed trucks around on bridges. In several of the instances I know that, had there been no so-called guard rails on the bridge, the derailed trucks would have crossed in safety.

In your comments referred to you say: "All these frequent occurrences illustrate the fact that anything which will effectually restrain the wheels from suddenly slewing a long way out of their usual line will be likely to, in many cases, if not in nearly all, avert disaster from derailment." Now is not the wooden guard rail literally a slewer of trucks? I append a sketch showing how a derailed truck was affected by a guard rail, on one of our Southern roads, a short time since. This truck became derailed several hundred feet from the end of bridge, and ran along on the cross ties as shown by dotted lines. It was in a fair way to get over the bridge

safely when it touched the guard rail and immediately slewed around, causing a bad wreck. I would like to hear from old railroaders on this subject, as in my opinion it is an important one. J. N. H.

TECHNICAL.

Locomotive Building.

The Georgia Pacific road has placed an order for 16 locomotives with the Baldwin Locomotive Works in Philadelphia.

The Brooks Locomotive Works in Dunkirk, N. Y., are making a large addition to their boiler shops.

The New York Locomotive Works in Rome, N. Y., have taken a contract to build 10 shifting engines for the Union Pacific road.

The Car Shops.

The Peninsular Car Co. in Detroit is building 1,000 coal cars for the Toledo & Ohio Central road.

The Missouri Car & Foundry Co. in St. Louis is at work on a contract for 2,200 freight cars for the Missouri Pacific road.

The Gilbert Car Works in Troy, N. Y., are building a number of passenger cars for the Missouri Pacific road.

The Ontario Car Works in London, Ont., have just finished several passenger cars for the Manitoba & Northwestern road, and have taken an order to build 100 flat cars for the Canadian Pacific.

The Terre Haute Car Co. in Terre Haute, Ind., has recently taken contracts for 500 box cars for the Cincinnati, Hamilton & Dayton, and is also building 500 freight cars for the Wheeling & Lake Erie road.

The La Fayette Car Co. in La Fayette, Ind., is building 500 box cars for the Chicago & Northwestern road, and also a number of coal cars for the Chicago & Indiana Coal road.

The Wells & French Co. in Chicago is building 750 freight cars for the Chicago, Burlington & Quincy road.

The Michigan Car Co. in Detroit, Mich., is building 200 coal cars for the Toledo & Ohio Central, and 250 box cars for the Chicago, Burlington & Quincy.

The Indianapolis Car Co. in Indianapolis, Ind., has taken a contract to build 500 box cars for the Cincinnati, Hamilton & Dayton.

The Pullman Car Shops in Pullman, Ill., are building 18 new cars, to be run on the Pennsylvania limited trains between New York, Washington and Chicago. Ten of these cars are sleeping cars, 4 combination and 4 dining cars. They are intended to be the finest cars ever made in the Pullman shops. Each car will be supplied with a bathroom, in addition to the ordinary toilet appliances.

Bridge Notes.

The Smith Bridge Co. in Toledo, O., is putting up several iron bridges for the Cincinnati, Hamilton & Dayton and the Indiana, Bloomington & Western roads. The company has its shops full of work.

The Keystone Bridge Co. in Pittsburgh has taken a contract to build an iron lighthouse on the north shore inlet creek for the city of Chicago.

Manufacturing and Business.

The Union Switch & Signal Co. is removing its works from Pittsburgh to Edgewood, to the buildings formerly occupied by the Old Swissvale Car Works. The buildings now occupied by the Signal Co. will be taken by the Westinghouse Electric Light Co. for its works.

The Vulcan Iron Works in Chicago have a heavy order for castings and other iron work for the North Side Cable road in that city.

The Blake Manufacturing Co. in Warren, Mass., is just completing a large compound condensing duplex pumping engine to go to Toledo, O., for the water-works of that city.

The Wainwright Manufacturing Co., 65 and 67 Oliver street, Boston, and 93 Liberty street, New York, has sold feed-water heaters to the following firms during the month of October: Westfield Plate Co., Thompsonville, Conn.; Badger Bros., Quincy, Mass.; Fairbanks & Co., Philadelphia; Davidson Steam Pump Co., New York; Gibbs & Geoghegan, New York; Richmond Water-Works, Richmond, Me.; Sayre Pipe Foundry Co., Sayre, Pa.; Chas. Theis, Nyack, N. Y.; Davidson Steam Pump Co., Boston; Westerly Water-Works, Westerly, R. I.; Swartzchild & Selsburgher, New York City. These heaters are constructed with corrugated copper tubes, which give increased heating surface, making, it is claimed, the best feed-water heater in the market, and they are not only in demand in this country, but their fame has gone abroad, one having recently been shipped to Japan, one to Cuba and one to Canada. The company has very lately erected a purifying plant for preventing the formation of scale in the boilers of S. N. Brown & Co., Dayton, O., the working of which is attracting considerable notice in the West.

William Chisholm, George Warrington, H. D. Coffinberry, J. H. Wade, Jr., R. R. Rhodes and other capitalists have organized the Cleveland Shipbuilding Co. in Cleveland, O., with a capital stock of \$250,000 to build vessels and manufacture plate and sheet iron.

The old foundry of McConway & Torley in Pittsburgh was destroyed by fire on Nov. 7. The firm announces that it will be ready to fill orders in about 10 days from its new foundry at Forty-ninth street and Railroad avenue, which is the largest foundry in Pittsburgh.

Iron and Steel.

The Ashland Iron & Steel Co. has been organized to build a blast furnace at Ashland, Wis., and contracts have been made for the work. Mr. W. W. Eastman is President and James E. York General Manager of the company.

The Olive Iron & Steel Co. has put its Mary furnace in the Hocking Valley region in blast.

The Blom and Scioto furnaces in the Hanging Rock region in Ohio will go into blast in a few days.

The property of the Bay State Iron Co., at Port Henry, N. Y., was to be sold at public sale, under foreclosure of mortgage, Nov. 10. The property includes 370 acres of land, 2 blast furnaces and a number of other buildings.

The repairs of Chatham Furnace, at Chatham, N. Y., have been completed and it will go into blast shortly. It is a charcoal furnace.

The Hudson River Ore & Iron Co. has leased the blast furnace at Cold Spring, N. Y., and is now repairing it, with the intention of putting it into blast very shortly.

American Society of Civil Engineers.

At the last regular meeting in New York, Mr. Robert L. Harris read a paper on "Notes of a recent visit to the St. Lawrence Bridge, now being constructed at Lacbelle, Canada." The chief matter of interest was the remarkable speed at which the masonry has been built in a current of 8 to 9 miles per hour, one being in water 40 ft. deep. The whole has been built in a year, and the bridge will be finished before 1887.

Señor D. Roberto Gayol, City Engineer of Mexico, was then introduced, and gave an interesting description of the work progressing for the drainage of the city and valley, and the entire removal of Lake Texcoco. A canal 30 miles long, 23 ft. wide at base, with 1 ft. grade per mile, will carry the

BURLINGTON BRAKE TESTS.—Comparative Absolute Efficiency of each Brake in each Stop and Class of Stop. Reduced to the Uniform Standard of the Per Cent. of Retarding Force to the Weight on Braked Wheels available for Braking Purposes. (Weights of Train in each Test, and official corrected Notes of each Stop were given in the Railroad Gazette of Oct. 29, 1886.)

Emergency Stops.	WESTINGHOUSE.				FAMES.				AMERICAN.				WIDFIELD & BUTTON.				NOTE.			
	1.	2.	3.	4.	Average.	1.	2.	3.	4.	Average.	1.	2.	3.	4.	Average.	1.	2.	3.	4.	Average.
Engine and 1 car straight air or vac.....	8,902	8,147	9,253	7,113	8,376	9,489	8,870	9,894	8,798	9,213	11,906	9,98	10,612	10,003	10,640	4,368	3,587	4,560	(hand.)	3,929
Average, eng. brakes.....	10,874	12,487	11,024	11,169	11,386	11,500	11,809	11,992	11,500	12,150	15,907	14,558	12,780	12,150	14,049	3,870	3,044	4,651	3,189	3,534
25-car mixed, all braked.....	9,918	10,317	10,158	9,137	9,881	10,497	10,335	10,943	10,049	11,576	13,936	12,269	11,596	11,576	12,345	5,702	5,702	5,702	5,702	5,702
Average, 25 m. ".....	8,917	10,040	8,688	9,731	9,343	7,137	7,34	7,20	7,304	7,345	6,730	5,022	6,231	5,98	6,770	6,730	6,730	6,730	6,730	6,730
25-car mixed, rear 12 cut out.....	9,831	10,134	8,230	9,119	9,379	7,785	7,473	7,314	7,304	7,345	6,034	5,43	6,430	5,434	6,856	5,690	5,690	5,690	5,690	5,690
50 empties, all braked.....	9,227	10,178	8,472	9,706	9,396	7,906	7,278	7,409	7,167	7,140	6,434	5,492	6,340	5,299	5,89	6,087	5,621	5,421	5,756	5,756
Average, 50 emp. ".....	8,820	11,090	10,415	10,323	10,112	11,071	10,111	10,812	8,081	10,019	8,953	7,518	6,882	5,765	7,280	9,718	8,441	7,457	8,282	8,282
50 empties, rear 20 cut out.....	4,684	6,047	5,080	7,135	5,959	4,908	5,108	5,71	6,113	5,94	4,728	7,000	4,708	3,954	4,483	2,803	8,901	8,81	6,03	6,03
Average, 50 emp. ".....	4,905	6,826	5,113	7,135	5,959	5,213	6,056	5,844	6,623	5,931	7,058	7,060	7,200	6,481	6,910	9,780	8,671	8,150	7,045	8,114
Hand train brakes and driver brake.....	8,401	9,026	6,228	9,197	8,21	8,043	.....	.....	.....	.....	7,058	7,060	7,200	6,481	6,910	.....	.....	.....	.....	.....
Average, 50 emp. ".....	3,246	3,889	3,874	5,300	4,077	8,043	.....	.....	.....	.....	2,580	2,838	3,482	3,504	3,101	2,553	3,673	3,668	4,477	3,593

The Widfield & Button made no 50-car tests, but made two runs of 25-car emergency stops, rear 12 cut out, alone of all the competitors.

Service stops, steam shut off at beginning of stop.				Service stops, steam shut off 500 and 1,000 ft. before stop post.			
1.	2.	3.	4.	1.	2.	3.	4.
25-car mixed, rear 12 cut out.....	8,774	10,726	9,443	8,648	9,398	8,831	8,117
50 empties, all braked.....	1,975	2,150	1,703	3,700	2,407	4,031	3,956
Average, 50 empties, all braked.....	1,803	3,235	2,121	4,094	2,813	4,031	3,986
50 empties, rear 20 cut out.....	6,304	7,122	5,750	9,187	7,078	5,670	6,622

(Owing to varying efforts to diminish shocks, these stops are quite irregular and of doubtful value as an index of efficiency.)

Service stops, steam shut off 500 and 1,000 ft. before stop post.				Service stops, steam shut off at beginning of stop.			
1.	2.	3.	4.	1.	2.	3.	4.
50 mixed cars.....	4,894	5,790	4,354	7,500	5,602	3,981	3,742
50 loaded cars.....	3,197	8,010	5,677	8,560	7,433	5,107	5,185
Average.....	4,030	6,239	5,037	7,660	5,860	3,893	4,885

The above table is equivalent to saying that, with all conditions exactly equal except the difference in the power brake gear under test—with the grade precisely level, the initial speed exactly the same, with no internal load to which brakes were not adjusted, with brakes on every wheel, with cars of the same weight, with uniform pressure on all wheels, a car with the same train resistance, the brake gear under test operating with the same efficiency per ton of braked load as it actually did operate on that part of the load to which brakes were applied, would have stopped a train moving at a speed of 21 miles per hour in every case in the following distance:

KIND OF TRAIN.				KIND OF TRAIN.			
1.	2.	3.	4.	1.	2.	3.	4.
Engine and 13 car train had 12 unbraked cars behind them, and the 30 car train 30 unbraked cars behind them.....	143	139	140	155	144	136	115
Engine and 12 1/2 cars, all wheels braked.....	145	138	136	134	142	123	115
Engine and 12 1/2 cars, all wheels braked.....	154	140	108	146	146	246	195
Engine and 12 1/2 cars, all wheels braked.....	169	157	228	154	193	224	241
Engine and 12 1/2 cars, all wheels braked.....	206	214	278	241	241	219	205
Engine and 12 1/2 cars, all wheels braked.....	410	305	367	241	241	350	317

N. B.—The 13 car train had 12 unbraked cars behind them, and the 30 car train 30 unbraked cars behind them. The difference in the efficiency of the buffer brakes, but 1.06 of the 12 brakes.

Engine brakes only, all wheels braked.....

Engine and 12 1/2 cars, all braked.....

Engine and 12 1/2 cars, all braked.....

Engine and 12 1/2 cars, all braked.....

Engine and 12 1/2 cars, all braked.....

Engine and 12 1/2 cars, all braked.....

Engine and 12 1/2 cars, all braked.....

Engine and 12 1/2 cars, all braked.....

Engine and 12 1/2 cars, all braked.....

Engine and 12 1/2 cars, all braked.....

Engine and 12 1/2 cars, all braked.....

water to the base of a ridge, which will be penetrated by a tunnel 12 x 13 ft. internal section, 6 miles long, with a grade of 1% per 1,000. The water, after passing the ridge, will be used for irrigation purposes.

Captain A. E. Piovkow, the representative of Herr Gruson, of Buckau, Germany, the manufacturer of the Gruson armor, was then introduced, and gave a description of the chilled cast armor, with which such remarkable results have been obtained in breaking up the heaviest projectiles discharged against it.

The Rail Market.

Steel Rails.—Quotations continue unchanged at \$34.50@ \$35 per ton at Eastern mills. The mills have plenty of work and are not at all disposed to shade quotations, except for unusually desirable orders. Some heavy orders are said to be on the market for spring delivery.

Rail Fastenings.—Prices are unchanged with an increasing demand. Spikes are quoted at 2.40 cents per lb. in Pittsburgh; track-bolts, 2.75@3, and splice-bars at 1.65@1.80.

Old Rails.—The market for old iron rails continues firm and quotations are \$22@22.50 per ton at tidewater, with several sales reported at \$22. Old steel rails continue scarce and are quoted at \$23@23.50 per ton in Pittsburgh.

Tenders for Railroad Supplies.

The Union Pacific Railway Co. invites by advertisement, tenders for its whole supply of staple articles for the year 1887. A list of articles will be furnished on application to J. J. Burns, General Storekeeper, at Omaha, Nebraska.

THE SCRAP HEAP.

Keeping his Seat.

A correspondent of the Hartford Times relates a little incident that is both amusing and suggestive: "It is generally understood that if a person vacates a seat for a few moments and leaves some article in it, that this will secure it till his return. In more than one instance we have seen an overcoat or satchel removed from a seat thus reserved, and placed elsewhere by a newcomer. An amusing case of the kind recently occurred on a road not far from Hartford. A gentleman had occasion to leave his seat for a few moments at a station, and on returning found his overcoat and satchel removed and the seat taken possession of by a young man and 'his best girl.' The gentleman said to the young man: 'I think I am entitled to this seat, as I left articles in it while I stepped to the platform for a moment.' Said the young man: 'Possession is nine points of the law, and I think we will keep the seat.' Then, said the gentleman, 'I will please rise that I may get my umbrella.' The young man could not refuse this reasonable request, and as he rose from the seat the gentleman slipped into it, much to the amusement of the other passengers. The young man then requested 'his best girl' to go with him to another seat. In reply she said, 'I can't get out.' Will you rise? said the young man to the gentleman, 'and allow this lady to come out.' 'I think not,' said the latter; 'if possession is nine points of the law, I propose to avail myself of the same, and if your friend wishes to vacate the seat she can step over or in front, which she did without delay, causing more than a smile from those who witnessed the performance.'

How Some Railroads Are Built.

When railroad men of prominence get out of a job they sometimes turn their wits to railroad building. It is no myth that roads are often constructed without the use of a dollar except the proceeds of the bonds. A case in point could be named now. Some months ago several gentlemen sat down together and discussed the chances of disposing advantageously of a line of road from Blank station to Blank. Not that there was any road there, nor that any of the parties had a cent of money with which to construct a road; but it was a feasible route and the gentlemen were needy. It was thereupon coolly decided to build a road connecting the two stations, and faith was pinned to the belief that the proposed line would be so valuable that several well established companies would be compelled to bid for the road to head off competitors. As the schemers had an abundance of time on their hands, they soon procured the right of way gratis, the farmers along the line being shown conclusively that there were millions in the new road for them, and being made radical converts by the presence of an annual pass on the road that was to be built, with perhaps, the addition of a few shares of stock—which they afterward discovered to be assessable.

With the right of way secured, the builders went into the open market, shook their deeds in the faces of moneyed men, pointed out on the map that their right of way was the direct air line—although it swung 40 miles south of a beeline at one point—and spoke mysteriously of colossal offers that had already been received and rejected. The result was that the right of way was soon bonded at \$15,000 per mile; construction was begun; townships all along the line voted liberal assistance; the officers who had worked so hard were put on big salaries, and the scheme is moving along swimmingly. Everybody thinks he has received benefits from the road; the penniless builders have got a permanent job again; they own most of the stock, have elected themselves directors, and are altogether the biggest, most "enterprising" men of the community. All they want they can get by simply asking for it—even to more money from the mortgagees, who are in so deep that the only way out is dead ahead.

Several roads are already after the new line, and when they get it they will pay for it, and when the constructors let go they will retire on fortunes made out of clean wind.—*Indianapolis News.*

Fast Time on Heavy Grades.

A train on the Denver & Rio Grande road recently ran 36 miles up a very heavy grade from Buena Vista to Leadville, 36 miles in 70 minutes, making three stops of five minutes each, leaving the actual running time 55 minutes. The train consisted of 6 passenger cars, crowded with excursionists. The engine was of the consolidation pattern, having 15 by 18 in. cylinders and 8 driving wheels 3 ft. in diameter, and was built especially for service on these grades.

An Old Locomotive Engineer.

Leonard Ham, the veteran locomotive engineer of this city, who recently died in Detroit, was one of the many engineers who passed through memorable events in the line of duty. He ran the first engine ever put upon the Central-Hudson Railroad and lived to the day when that great corporation used over 700 locomotives. He was also engineer of the train which conveyed Abraham Lincoln to Washington at his first inauguration and which Southern sympathizers had arranged to mob at Baltimore, but which was averted by the President elect passing through on a regular train, in disguise the night before, arriving at the capital Feb. 23, 1861. Again in 1865, after President Lincoln had been assassinated and after his remains had lain in state in the different cities en route to Springfield, O., Mr. Ham had charge of the locomotive that drew the funeral train over the Central-Hudson Railroad from Albany to Buffalo, and which has ever since given rise to a superstition among railway men that on the same day every year (April 23) and at the same

RAILROAD EARNINGS IN SEPTEMBER.

NAME OF ROAD.	MILEAGE.					EARNINGS.					EARNINGS PER MILE.				
	1886.	1885.	Inc.	Dec.	P. c.	1886.	1885.	Inc.	Dec.	P. c.	1886.	1885.	Inc.	Dec.	P. c.
EASTERN ROADS.															
Balt. & Potomac	92	92				\$ 122,635	\$ 112,071	\$ 10,564		9.4	\$ 1,332	\$ 1,218	\$ 114		9.4
Buff., N. Y. & Ph	663	663				234,500	238,400		3,900	1.6	354	360		6	1.6
Buff., Ro. & Pitts	294	294				118,805	133,431		14,626	10.9	404	454		50	10.9
Grand Trunk	3,004	2,998	6		0.2	1,527,102	1,294,003	233,099		17.4	507	433	74		17.2
Lehigh & H. R.	63	63				18,306	17,481	825		4.7	291	277	14		4.7
Long Island	354	354				330,255	315,788	14,467		4.4	933	892	41		4.4
N. Y. C. & H. R.	1,541	993	548		55.2	3,058,548	2,437,668	620,880		25.5	1,985	1,455		470	19.0
N. Y. City & No.	54	54				47,284	42,391	4,893		11.6	876	785	91		11.6
N. Y. & N. Eng.	392	392				30,737	351,611	39,120		11.1	997	997	100		11.1
N. Y., Ont. & W.	321	321				129,483	129,675	5,808		4.7	403	385	18		4.7
N. Y. Sus. & W.	153	150	3		2.0	102,817	103,354		2,537	2.4	672	702		30	4.3
Northern Cen.	2,340	2,388	72		3.1	4,674,052	4,304,753	369,299		6.3	1,469	1,508		99	6.3
Pennsylvania	2,440	2,368	72		3.1	4,674,052	4,304,753	369,299		6.3	1,469	1,508		99	6.3
Phila. & Reading	1,560	1,560				2,929,616	2,809,387	120,229		4.6	1,877	1,795	83		4.6
West Jersey	200	200				133,725	125,123	8,602		6.9	669	626	43		6.9
Total, 15 roads	11,353	10,724	629		5.9	14,290,809	12,883,364	1,406,317	52,872	10.9	1,259	1,201	58		4.8
Total inc. or dec.			629		5.9			1,407,415		10.9			58		4.8
SOUTHERN ROADS.															
Ala. Great So.	290	290				104,428	90,523	13,905		15.4	360	313	47		15.4
ape R. & Y. V.	155	155				20,580	19,961	619		3.1	133	129	4		3.1
Chn., N. O. & T. P.	1,308	1,308				251,312	241,225	10,087		4.2	748	718	30		4.2
E. Ten., V. & G.	1,100	1,100				380,157	370,824	9,333		4.6	354	337	17		4.9
Flo. Ry. & N. O.	540	540				69,046	65,028	4,018		6.2	128	120	8		6.2
Ill. Cen., So. Div.	711	711				287,274	318,564		31,290	9.9	404	448		44	9.9
Jack., T. & K. W.	204	56	148		264.3	23,707	4,900	18,798		382.9	116	88	28		31.8
Louis., N. O. & T.	2,022	2,022				1,258,191	1,148,213	109,978		9.6	622	568	54		9.6
Louis., N. O. & T.	533	533				131,088	90,106	41,882		46.5	248	169	79		46.5
Mem. & Charles	292	292				120,789	105,195	15,594		14.8	414	360	54		14.8
Mobile & Ohio	680	680				134,944	110,038		35,094	18.5	218	250		52	18.5
N. Chat. & St. L.	580	580				223,311	192,865	30,446		15.8	385	333	52		15.8
N. O. & North E.	195	195				45,645	46,874	71		0.2	235	235			
N. N. & M. V. Co.	502	502				388,992	369,097	19,895		25.8	775	616	159		25.8
Ches. & Ohio	130	130				95,801	72,519	23,282		31.9	737	558	179		31.9
E. Lex. & B. S.	399	399				163,943	138,892	25,051		15.8	403	348	55		15.8
C. Ohio & S. W.	510	510				319,255	267,474	51,781		19.0	626	524	102		19.0
Norfolk & West.	960	960				306,327	373,034		6,706	1.8	382	289		7	1.8
Rich. & Danville	355	355				168,240	167,304	936		0.6	474	471	3		0.6
Va. Midland Ry.	290	276	14		5.1	56,491	45,806	10,685		23.4	195	166	29		17.2
W. N. C. Div.	373	373				58,567	80,150		21,583	29.9	157	215		58	29.9
So. Car. Div.	296	296				40,720	63,400		22,680	35.8	138	214		76	35.8
Gr. & Col. Div.	255	275				85,272	76,925	8,347		10.8	334	302	32		10.8
Shenandoah Val.	246	246				101,819	113,427		11,528	10.2	414	461		47	10.2
South Carolina	143	143				36,401	36,883		482	1.3	255	258		3	1.3
Vicks. & Merid'n															
Total, 25 roads	12,097	11,935	162		1.4	4,050,550	4,628,109	460,714	120,363	7.2	410	388	22		5.7
Total inc. or dec.			162		1.4			331,351		7.2			22		5.7
CENTRAL GROUP.															
Cairo, V. & Chi.	265	265				57,571	43,965	13,606		30.8	217	163	54		30.8
Chi. & Atlantic	269	269				174,030	121,480	52,550		43.4	647	452	195		43.4
Chi. & East. Ill.	252	252				167,300	169,714		2,414	1.4	665	673		8	1.4
Chi. & W. Mich.	413	413				12,8594	116,809	11,785		10.1	312	283	29		10.1
Cin. & Eastern	141	141				19,848	14,704	5,144		35.0	141	104	37		35.0
C. I., St. L. & C.	342	342				248,275	219,256	29,019		13.3	726	611	115		13.3
Cin., Jack. & M.	98	61	7		7.7	11,242	15,504	5,838		37.7	218	170	48		28.2
C. Wash. & Balt.	281	281				203,710	190,824	12,886		35.9	735	533	192		35.9
Clev. & Col.	144	144				51,725	49,370	2,355		4.8	359	343	16		4.8
Cleve. & Canton	161	161				33,807	24,892	8,915		35.7	210	155	55		35.7
Col. & Cin. Mid.	71	71				34,420	25,585	8,835		34.1	485	360	125		34.1
Col. H. V. & T.	328	324	4		1.2	232,891	231,966	895		0.4	710	716		6	0.4
Det., Lan. & No.	261	261				109,787	128,295		18,508	14.5	421	492		71	14.5
Ev. & T. Haute.	146	146				65,106	68,470		3,364	4.9	446	469		23	4.9
Flint & Pere Mar.	302	302				178,428	167,754	10,674		6.0	493	463	30		6.0
G. R. & Ind.	404	404				191,597	190,517	1,080		0.6	474	471	3		0.6
Ill. Cen., Ill. lines	953	953				615,063	615,063	23,089		3.7	670	646	24		3.7
Ind. Bl. & West.	532	532				253,363	242,461	10,902		4.3	476	456	20		4.3
Ind., Des. & Sp.	152	152				38,357	36,799	1,558		4.2	252	242	10		4.2
Lake Erie & W.	387	387				123,949	121,415	2,534		2.1	320	312	7		2.1
L. Ev. & St. L.	253	253				88,217	65,547	22,670		34.4	349	219	90		34.4
L. N. A. & Chi.	477	477				190,593	161,272	29,321		18.2	400	338	62		18.2
Mich. & Ohio	615	615				365,261	344,618	20,643		13.1	639	569	70		13.1
Ohio Southern	170	170				53,101	50,074	3,027		10.1	408	454		46	10.1
Peoria, Dec. & Ev.	254	254				89,810	70,157	19,653		13.5	354	312	42		13.5
St. L. Al. & T. H.															
Main line	105	105				132,886	137,549		4,663	3.4	681	705		24	3.4
Belleville line.	138	138				76,909	77,549	1,591		2.1	557	546	11		2.1
T. A. A. & N. M.	100	100				33,150	39,434	3,882		13.0	332	293	39		13.0
Valley, O. Cen.	213	213				88,206	67,284	15,658		24.1	378	304	74		24.1
Valley, O. Cen.	82	82				53,067	46,944	7,033		14.9	658	572	86		14.9
Wab., St. L. & P.	2,140	2,140				1,201,936	1,139,439	62,497		5.5	562	533	29		5.5
Total, 32 roads	10,715	10,704	11		0.1	5,387,281	4,977,559	444,638	34,916	8.2	503	465	38		8.2
Total inc. or dec.			11		0.1			409,722		8.2			38		8.2
NORTHWESTERN ROADS.															
Bur., Ced R. & No.	990	990				297,854	290,073		2,119	0.7	301	303		2	0.7
Central Iowa	521	500	21		4.2	123,476	142,044		18,068	12.8	238	284		46	12.8
Chi. & Alton	650	850				770,134	755,825	14,299		1.9	906	869	17		1.9
Chi. Bur. & G.	3,700	3,480	220		6.3	2,724,588	2,640,034	84,554		3.2	739	689	50		3.2
Chi., Mil. & St. P.	4,990	4,935	55		1.1	2,555,010	2,273,278	281,722		12.4	512	461	51		11.7
Chi. & Northw.	4,055	3,843	212		5.8	2,687,300	2,552,325	134,975		5.3	663	664		1	0.2
C. St. P., M. & O	1,343	1,320	23		1.7	618,800	600,905	17,895		2.9	461	455	6		1.3
Des M. & Ft. D.	143	143				35,498	40,695		5,197	12.7	248	185		37	12.7
Ill. Cen., Ia. lines	402	402				182,590	167,288	15,303		9.2	454	416	38		9.2
Mar. H. & Ont.	160	160				17,639	17,199	441		0.4	735	732	3		0.4
Mil., L. S. & W.	553	520	13		2.5	247,531	148,505	93,926		62.7	455	266	169		59.1
M. & Northern	297	297				127,259	127,259	10,040		23.8	204	48		23	23.8
Wisconsin Cen.	450	450				131,324	122,505	8,819		6.8	292	273	19		6.8
Total, 13 roads	18,304	17,820	544		3.1	10,544,464	9,907,419	662,429	25,384	6.4	574	556	18		6.4
Total inc. or dec.			544		3.1			637,045		6.4			18		6.4
ROADS NORTHWEST OF ST. PAUL.															
Canadian Pac.	4,166	3,664	1,102		35.6	955,963	823,487	132,476		16.1	229	289		40	14.8
Northern Pac.	2,778														

RAILROAD EARNINGS, NINE MONTHS TO SEPTEMBER 30.

NAME OF ROAD.	MILEAGE.					EARNINGS					EARNINGS PER MILE.				
	1886.	1885.	Inc.	Dec.	P. c.	1886.	1885.	Increase.	Decrease.	P. c.	1886.	1885.	Inc.	Dec.	P. c.
EASTERN ROADS.															
Balt. & Potomac.	92	92				\$ 979,202	\$ 974,270	\$ 4,932		0.5	\$ 10,614	\$ 11,500	\$ 54		0.5
Boston & Albany	384	384				6,162,584	5,622,723	539,861		9.0	6,048	14,614	1,405		9.0
Bur. N. Y. & P.	604	604				1,918,580	1,758,010	160,570		10.2	2,924	2,652	272		10.3
Bur. & Roch. & P.	294	294				877,628	904,735	27,107		3.0	2,985	3,077	92		3.0
Grand Trunk	3,000	2,986	14		0.4	12,943,621	10,683,729	2,259,892		12.6	4,011	3,581	430		12.0
Lehigh & H. R.	63	63				156,679	128,753	27,926		21.6	2,487	2,044	443		21.6
Long Island	354	354				2,353,195	2,239,210	113,979		5.1	6,647	6,325	322		5.1
N. Y. C. & H. R.	1,541	993	548		55.2	23,629,759	17,019,271	6,610,487		34.1	15,333	17,741	2,408		24.0
N. Y. City & N. Y.	54	54				400,077	321,812	78,265		24.3	7,409	5,939	1,470		14.2
N. Y. & N. Eng.	392	392				2,907,921	2,488,741	419,180		16.8	7,411	6,349	1,062		16.8
N. Y. O. & W.	321	321				991,289	833,237	158,052		19.0	3,088	2,917	171		19.0
N. Y. Sus. & W.	153	150	3		2.0	790,292	853,510	63,218		6.2	5,224	5,357	133		2.5
Northern Cen.	322	322				4,068,833	3,996,018	72,815		1.8	12,444	12,316	128		1.0
Penn. R. R.	2,311	2,264	47		2.1	36,805,912	31,230,646	5,575,266		17.9	15,822	14,657	1,165		8.0
Phila. & Rea. I.	1,560	1,560				21,321,808	21,971,189	650,381		3.0	14,052	13,521	531		3.9
West Jersey.	200	200				1,077,130	1,018,001	59,129		5.8	5,486	5,096	390		5.8
Total, 16 roads.	11,723	11,096	627		5.7	117,110,965	103,801,525	13,309,440		12.8	9,930	9,555	375		6.7
Tot. inc. or dec.			627					13,309,440					375		
SOUTHERN ROADS.															
Ala. Gt. South.	291	290				820,722	777,577	43,145		5.6	2,861	2,612	249		9.4
Cape F. & Y. V.	155	153				100,215	48,981	51,234		7.6	1,034	901	133		7.6
Cin. N. O. & T. P.	396	396				2,044,273	1,939,998	104,275		5.3	5,054	4,684	370		6.5
E. T. V. & Ga.	1,100	1,100				2,949,781	2,860,373	89,408		3.1	2,681	2,628	53		2.0
Ill. Cen. S. Div.	711	711				2,618,079	2,330,307	287,772		10.6	3,682	4,121	439		10.6
Louis. & Nash.	2,022	2,044				10,048,409	10,119,169	70,760		0.7	4,969	4,951	18		0.4
Louis. N. O. & T.	533	498	35		7.0	1,070,533	771,145	299,388		41.7	3,050	1,549	1,501		31.3
Mem. & Cha. les.	292	292				930,524	896,159	34,365		3.8	3,187	3,069	118		3.8
Mobile & Ohio	574	578				1,297,488	1,486,333	188,845		12.7	2,245	2,571	326		12.7
Nash. C. & St. L.	590	580				1,743,856	1,567,866	175,990		11.2	3,067	2,703	364		11.2
N. Or. & N. E.	195	195				421,145	461,506	40,361		8.5	2,165	2,307	142		8.5
N. N. & M. V. Co.	502	502				3,025,285	2,454,923	570,362		23.2	6,026	4,874	1,152		23.2
Ches. & O. I.	140	140				1,030,730	509,509	521,221		32.6	5,201	3,019	2,182		32.6
Rich. C. & W.	309	309				1,186,029	1,108,916	77,113		7.0	2,972	2,779	193		7.0
Nor. & West.	510	510				2,312,990	1,965,075	347,915		18.0	4,534	3,853	681		18.0
Rich. & Danville.	960	960				2,806,224	2,823,845	17,621		1.5	2,986	2,942	44		1.5
Rich. & D. Div.	355	355				1,128,933	1,141,190	12,257		1.1	3,180	3,215	35		1.1
West. N. C. Div.	291	276	15		5.1	391,260	345,246	46,014		13.3	1,349	1,251	98		7.9
So. Car. Div.	371	373				532,392	501,416	30,976		6.2	1,435	1,505	70		4.6
Green & C. Div.	290	296				4,016,461	454,161	3,562,300		43.9	5,866	1,537	4,329		15.1
S. en. Valley.	255	255				333,333	312,737	20,596		6.3	2,911	2,011	900		15.1
So. Carolina.	240	240				774,222	781,251	7,029		0.9	3,147	3,176	29		0.9
Vick. & Mer. Jan.	113	113				313,157	290,228	22,929		14.8	2,402	2,092	310		14.8
Total, 23 roads.	11,251	11,224	27		0.2	38,309,303	36,897,142	1,412,161		3.8	3,405	3,287	118		3.6
Tot. inc. or dec.			27					1,412,161					118		
CENTRAL GROUP.															
Chi. & East. Ill.	212	212				1,260,165	1,172,905	87,260		7.4	5,001	4,654	347		7.4
Chi. & West. Ill.	413	413				1,030,730	946,143	84,587		8.0	2,495	2,301	194		8.0
C. & St. L. & Ch.	342	342				1,901,340	1,752,791	148,549		8.5	5,559	5,123	436		8.5
C. Wash. & Balt.	241	241				1,449,719	1,244,815	204,904		16.5	5,159	4,431	728		16.5
Cleve. & Ak. & Col.	144	144				394,744	372,631	22,113		5.9	2,741	2,584	157		5.9
Cleve. & Canton.	161	161				202,447	215,197	12,750		21.9	1,630	1,347	283		21.9
Col. & Cin. Mid.	71	71				232,833	142,447	90,386		63.6	3,280	2,008	1,272		63.6
Col. H. V. & Tol.	324	324				1,701,524	1,707,268	5,744		0.3	5,899	5,299	600		8.0
Det. & Laas. & No.	261	261				892,703	885,933	6,770		0.8	3,420	3,394	26		0.8
Ev. & Terra. H.	145	146				563,782	538,673	25,109		4.6	3,862	3,690	172		4.6
Flint & Pere Mar.	362	362				1,597,622	1,410,641	186,981		13.3	4,413	3,895	518		13.3
Grand Rap. & In.	494	494				1,480,967	1,437,843	43,124		3.0	3,665	3,440	225		3.0
Ill. Cent. Ill. line.	653	653				4,790,988	4,704,052	86,936		1.8	12,928	12,930	2		1.8
Ind. & Bloom. & W.	532	532				1,800,123	1,744,149	55,974		3.2	5,019	4,724	295		6.3
Ind. & D. & Spring.	152	152				306,927	263,514	43,413		16.5	2,016	1,734	282		16.5
Lake Erie & W. St.	387	387				940,413	877,989	62,424		7.2	2,430	2,269	161		7.2
Louis. E. & St. L.	251	251				628,614	510,452	118,162		21.7	2,485	2,041	444		21.7
L. N. A. & Chi.	477	477				1,317,943	1,194,367	123,576		10.3	2,805	2,504	301		10.3
Mich. & Ohio	169	169				169,093	130,869	38,224		22.3	1,026	839	187		22.3
Ohio & Miss.	615	615				2,817,510	2,699,144	118,366		4.3	4,014	4,390	376		5.1
Ohio Southern.	136	136				360,944	324,943	35,999		11.1	2,776	2,500	276		11.1
Peoria, D. & E.	254	254				589,086	542,463	46,623		8.0	2,319	2,130	189		8.0
St. L. A. I. & T. H.	195	195				917,254	924,495	7,241		0.8	4,701	4,741	40		0.8
Main line.	178	178				527,086	572,920	45,834		8.7	3,819	3,868	49		7.9
Wab. St. L. & P.	211	211				9,321,416	8,510,839	810,577		9.5	4,210	3,849	361		9.5
Tot. 15 roads.	9,614	9,614				37,348,433	34,736,373	2,612,060		7.5	3,883	3,613	270		7.5
Tot. inc. or dec.								2,612,060					270		
NORTHWESTERN ROADS.															
Bur. C. Rap. & N.	993	993				2,019,656	2,164,096	144,440		6.7	2,040	2,186	146		6.7
Central Iowa.	521	520	1		4.2	932,703	907,992	24,711		2.7	1,799	1,816	17		2.7
Chi. & Alton.	850	850				5,743,479	5,789,159	45,680		0.8	6,757	6,811	54		0.8
Chi. & Bur. & Q. & C.	3,063	3,469			5.6	10,239,869	10,019,139	220,730		2.2	3,273	3,428	155		4.0
Chi. & Mil. & St. P.	4,343	4,336	7		0.2	17,203,000	16,249,373	953,627		5.5	3,949	3,428	521		17.5
Chi. & N. W. St.	3,992	3,836	156		4.0	17,941,868	17,191,552	750,316		4.4	4,494	4,482	12		0.3
Chi. St. P. M. & O.	1,340	1,320	20		1.5	4,304,309	4,063,528	240,781		6.0	3,212	3,076	136		4.4
Des M. & Ft. Do															



Published Every Friday,
At 73 Broadway, New York.

EDITORIAL ANNOUNCEMENTS.

Passes.—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

THE FINAL RESULTS OF THE BRAKE TESTS.

We close our reports of these tests by the table in another column, which gives, for the first time, a strictly equitable and sufficient basis for comparing the records of what the various brakes tested at Burlington did in respect to efficiency. Efficiency is but one of the features of a good brake. Economy and durability are at least equally important, but the latter has not yet been formally tested. The efficiency record, however, when it extends over so long a series of tests as this, sheds no little light on the question of durability as well, as it also includes almost every detail of the mechanical action of the brakes, their quickness of application, force and evenness of pressure, the skill with which they have been designed to give the maximum pressure which the load will permit, their certainty of action, etc. All these details have their effect, and the comparative efficiency shows the net result.

Every source of inequality in comparison, such as differences of speed, of grade, of weight of cars, of load in the cars (which in some cases was quite different), of proportion of weight braked and unbraked, and of rolling friction of the train (which, of course, helped to stop the train as well as the brakes) has been eliminated from the table. The effect of the absurd load which some of the competitors placed on their own shoulders by entering the tests with brakes so rigged, through absence of a dead lever, that the pressure on one axle was only about three-quarters as much as on the other axle, has likewise been eliminated, so that the record shows, without need of any allowances whatever, just what the brake-gear under test, the parts painted red, were capable of doing, or at least did do. This it shows in two ways:

In the first part of the table is given the PERCENTAGE of the total brake retardation to the total braked weight, which includes only the weight of empty car or tender on the braked wheels.

In the second part of the table is given what is in effect the same thing in another and perhaps simpler form, viz., the distance in feet in which a train moving at 20 miles per hour on a level which had its whole weight of both cars and loading braked (and no rolling friction, although the latter makes but slight difference) would be stopped by brakes acting with the same per cent. of efficiency as in the actual stop. Therefore, if one distance is given as 100 and another 150, the brakes were 50 per cent. more efficient in the first case than in the last, and so with all of them. For those brakes which show least well in the record there is but one excuse: "a less perfect device," and there is no room left for any other ifs or buts, which is one of the chief reasons (besides the all-sufficient one that correctness of comparison required it) why it was desirable to exclude the effect of the inequality in respect to brake-levers; a kindness which the com-

petitors as men had no shadow of right to demand, but which the brakes as competing machines (if we may consider them for the moment as animate beings) had clearly a right to demand, since it was a handicap placed on them by the folly of the exhibitors without their knowledge or consent.

It does not follow from these records that the efficiency of each brake will remain permanently at these figures. In fact, we shall be surprised if every one of them does not show a material advance on its past records in the tests of April next. We suspect that even the brake which stands at the head of the record will be able to do this. Certainly they will in the matter of "service" stops, since with close couplings it is not probable that the shock of the quickest stop possible will be so violent as to be too great for "service," and if they can succeed in increasing the quickness of application they can readily effect a material improvement. The limits of possibility in this direction may be thus stated, the figures quoted being from an article on "The Maximum Efficiency of Brakes" in our issue of May 22, 1885:

Quickest stop possible, being that obtained with an experimental car fitted with the Westinghouse apparatus for varying brake-pressure according to speed, which has not been and is not likely to be applied in practice.	Per cent of efficiency to load on wheels.	Equivalent stop from 20 m. p. h. all weight braked, ft.
North British Railway tests, after brakes were once fully on, about	20.33	70
Do. ends of stops, from about 20 miles per hour	14.0	100
Do. average of entire stop, from about 45 miles per hour	20.0	71
Average in the Burlington tests, 25 car trains, say	11.85	120
	9.4	150

In the 20 mile per hour stops only, the average was less than 9.0, and in the trains longer than 25 cars the efficiency fell fast and far again, so that the rear brakes added little or nothing to quickness of stop. It does not follow that it was useless to have the brakes on the rear cars. They were there in case of that ever-present danger, a break-in-two, and if no better can be done, the railroad public need not shed many tears over the situation; but if better can be done, it is very desirable that it should be, and likewise very much for the interest of the brake companies, since if they could show a brake which would stop a train moving at 20 miles per hour in not much over half as great a distance as at Burlington, as they readily could if the loss of time in applying brakes could be saved, that brake could probably be introduced very nearly twice as fast. How much will be done in this direction at the coming tests is a very interesting question of the future. What the defects to be cured are, is tolerably clear from the accompanying table.

The way in which the efficiency of the brakes decreased with length of train is very clearly brought out in either part of the table. This decrease, it will be seen, was somewhat more rapid with the Eames than with the Westinghouse, the Eames beginning to fall off rapidly in efficiency as the train was increased beyond 12½ cars, while the Westinghouse held its own very well until trains of 25 cars were exceeded. On 50-car trains, in both the Eames and Westinghouse, the average efficiency of the brakes was but about half that with trains of less than 25 cars, indicating that all that was gained by more brakes at the rear was lost by the decreased efficiency of those at the head, so that the quickness of the stop was not affected, whether the rear half of the train had brakes or not. In case of a break-in-two, however, they would stop the two halves separately, if broken in nearly equal halves, in about half the distance that they would stop the whole train, applied from the engine. Moreover, it is, we fear, long years ahead before more than half the average train will have power brakes on, so that how the brakes work on more than half a train is not a question of immediate urgency. The decrease of efficiency with length is likewise far less than most people anticipated, and the general behavior of the brakes on very long trains far better than was expected, except in the matter of shock.

It will be observed that the buffer brakes show this same tendency to lose efficiency with increased length of train, and in somewhat greater degree; the comparative efficiency, as measured by length of stop in feet from 20 miles per hour, in a train with all wheels braked, having been:

	Air.	Buffer.	Air.	Buffer.
25-car trains, about as	140	195	or as 100	to 139
50-car trains, about as	238	317	or as 100	to 132

Extra distance run..... 98 and 122 or 40 p.c. 62½ p.c.

This considers only the distance record and not the manner of the stops, which at Burlington was so violent with 50-car buffer brake trains as to make the very fair nominal records utterly worthless as an indication of practicability. The buffer brakes, however, at least the best one tested, did not compare unfavorably in the matter of shock on 25 car trains. Should the ameliorating effect of eliminating the slack (as is to be done in the coming tests) prove as great with them

as it was proven to be with the air brakes, it would give the buffer brakes a much better comparative standing before the public than they have now.

The best comparative record made by the buffer brakes was on the 50-car trains with only 30 cars braked, the advantage of having the 20 unbraked cars in the rear to compress the buffers ahead being very obvious. Here the buffer brakes stand thus:

	Air.	Buffer.
Length for 20-mile stop, all weight braked	173 to 180-90	205

As such trains are likely to be the rule for many years, and as it is to be earnestly hoped that both the frequency of break-aways and the tendency to shocks will be diminished by the introduction of some more mechanical and close coupler, the record certainly has interest and importance, and indicates that the chances of the buffer brakes for a share of the trade are by no means gone, as was probably the first impression of nearly all the disinterested persons who took part in the tests, although there can be no question that the consummation most devoutly to be wished, apart from the question of cost, is to see all freight cars equipped, as practically all passenger cars are, with good automatic brakes. If this were once accomplished it is not at all probable that any saving in first cost would be sufficient to lead to the introduction of a less perfect device, but unfortunately the question stands quite differently in first introduction.

How and why the buffer brakes were able to make so good a comparative showing is very clear from the diagrams published in our issues of Oct. 22 and 29, and even from the tables herewith. It was not that they worked almost as efficiently after both kinds got into action, for they did not, but that they lost less time in getting ready to "put in their work." Even the buffer brakes were much slower in doing this than might be expected, but the difference of action is clearly brought out by comparing the different efficiencies of the brakes in the different stops. The air brakes showed the greatest efficiency in the longest stops, i. e., those in which there was most work to be done (the No. 4 stops, 40 miles per hour down grade), because the proportion of time during which the brakes were fully on was then greatest. On the other hand, although the buffer brakes likewise gained something in this respect, yet they lost far more from the decrease in the pushing back of the engine on the down grades, so that the best stop of the air brakes was the worst one of the buffers, and vice versa. This appears clearly in the following comparative figures:

AIR BRAKES.

Average equivalent length for equal efficiency of a 20-mile per hour level stop, for the average of 12½, 25 and 50-car trains, as shown in the second part of the table elsewhere given:

Stops in order of efficiency.	Kind.	Equivalent 20 miles per hour level stop, all weight braked.				EAMES.			
		WESTINGHOUSE.				EAMES.			
No.	Kind.	12½ CARS.	25 CARS.	50 CARS.	Average.	Per cent.	12½ CARS.	25 CARS.	50 CARS.
4.	40 m. p. h. down grade	138	146	194	159	1.13	176	198	214
2.	40 m. p. h. level	128	140	214	161	1.09	140	195	234
3.	20 m. p. h. down grade	126	168	278	194	0.90	131	192	243
1.	20 m. p. h. level	145	154	286	195	0.89½	138	180	271
	Average	139	151	238	176	1.00	142	191	239

With the Eames, the tendency to gain average efficiency with speed and length of stop is obscured by another reason, that the No. 2 and especially the No. 4 stops came quick upon the others, and in several instances the full maximum vacuum was not recovered. Comparing now the buffer stops we find that the order of relative efficiency runs exactly the reverse, as thus:

BUFFER BRAKES.

Average equivalent length of 20 mile per hour level stop as above.

Stops in order of efficiency.	Kind.	Equivalent 20 mile per hour level stop, all wheels braked.				WIDDIFIELD & BUTTUS.			
		AMERICAN.				WIDDIFIELD & BUTTUS.			
No.	Kind.	12½ CARS.	25 CARS.	50 CARS.	Average.	Per cent.	12½ CARS.	25 CARS.	50 CARS.
1.	20 m. p. h. level	159	221	211	300	220	1.00	145	233
3.	40 " down grade	206	224	197	208	247	1.02	174	241
2.	40 " level	180	250	201	210	240	1.00	161	253
4.	20 " down	216	248	210	225	273	0.88	202	262
	Average	195	241	205	317	240	1.00	169	247

The correspondence in the percentages between these two buffer brakes is remarkably close.

The tables show that the Rote brake was not so en-

tirely inefficient as appeared at the time, its average efficiency having been nearly up to the best performance of the hand brakes, in which latter tests the 39 tons of braked engine weight did about the same total retarding work (not retarding work per ton, by any means) as the 300 tons of braked car weight, but the help rendered by the latter was by no means insignificant. This appears in the following figures:

ROTE AND HAND BRAKES.								
Equivalent length for equal efficiency of a 20 mile per hour level stop, all weight braked, as shown in the second part of the large table herewith.								
ROTE.								
No.	Stops in order of efficiency shown.		Kind.	Equiv. 20 m. stop.	Per cent.			
3.	20 m. p. h.	down grade	.....	331	1.15		
1.	20 "	level	.....	344	1.12		
2.	40 "	level	.....	428	0.89		
4.	40 "	down grade	.....	446	0.85		
Average.....				381	1.00			
HAND.								
	West. cars.	Am. W. & B. cars.	Aver. age.	Per cent.				
4.	40 m. p. h.	down grade	268	405	317	330	1.21
3.	20 "	down grade	307	408	387	387	1.06
2.	40 "	level	365	500	357	417	.96
1.	20 "	level	440	550	556	515	.78
Average.....				348	458	395	400	1.00

Here the hand brakes show the best in the longer stops, as is but natural, since there was time for more of them to be put on, but the Rote did quite as well as the hand brakes on an average. Its heavy decrease of efficiency on the No. 4 stop was due in part to bending of its parts. The train only made two runs, with a long interval between, during which the bent parts on almost every car were straightened, only to be bent again in the next following run.

In respect to the proportion of work done by the engine brakes in these hand and Rote brake stops, calculation shows that with the given braked weights and efficiency actually developed in separate tests of the engine brakes the 25 car trains could have been stopped by the engine and tender brakes alone, from 20 miles per hour on a level, in a distance of:

	Westinghouse train.	Eames train.	American train.
Length of stop for engine brakes alone.	2,363	2,242	2,098
Actual distance in which they were stopped by engine and hand brakes together, reduced to the equivalent for a speed of exactly 20 miles.	812	956	1,041
Do. for Rote brake.	1st test 648 2d test 725		

In the 40-mile per hour stop a much larger proportion of the work was done by hand brakes, so we may say approximately that about half the work of the stops was done by the engine brakes, and half by the hand brakes.

The many other details in which these records and the recently published diagrams can be studied to advantage by those interested, we must pass over. All that is now left us to do is to wait for what further developments may come out of the coming April tests.

Railroad Rates and Business Principles.

Mr. John Taylor, who came here from London to labor with the Pennsylvania Railroad management in favor of making larger dividends, "hired a hall" in Philadelphia last week, and made known his inability to convince the company's managers that their policy was wrong. Incidentally he demonstrated his own incapacity to understand railroad business by asserting that the difference between the average rate of 0.696 cent per ton per mile on the Pennsylvania's lines east of Pittsburgh and Erie, and the 1.046 cents obtained by the Delaware, Lackawanna & Western would not exist "under a management conducted on business principles." Whether the difference between the average rate of 0.70 cent per ton per mile on the Lackawanna's Syracuse & Binghamton line, and the 1.25 cents on its Pennsylvania and New Jersey lines, not to say the 1.88 cents which it gets on its Sussex Railroad, is due to lack of "business principles" in its management, or the difference between the average cost of 0.460 cent per ton per mile on the Pennsylvania and 0.596 cent on the Lackawanna is also due to inefficiency of the Pennsylvania management, Mr. Taylor did not say. If we are to make the average rate received the test of "business principles" in railroad management, we shall have to convict most of the managements of our great systems in the more densely populated parts of the country. Why did the New York Central people throw away \$5,350,000 of profits for their shareholders in 1884-85, by accepting 0.68 cent per ton-mile, when the Boston & Albany got 0.94 cent? The Michigan Central's management certainly ought to be turned out for taking 0.56 cent, and the Lake Shore's for taking 0.53 cent per ton per mile, while the Grand Rapids & Indiana, lying right across them, got 1.22 cents.

The "difference" would have given the Michigan Central stockholders 24 per cent., the Canada Southern

18 per cent. and the Lake Shore 21 per cent. on their shares, whereas none of them got anything. These two managements threw away \$19,000,000 for lack of the "business principles" which would have enabled them to get average freight rates as high as those of the Grand Rapids & Indiana. And it is painful to see that the infection of American incapacity extends even to lines controlled where "business principles" most do flourish, in England itself; for we find that the Chicago & Grand Trunk in 1885 accepted a beggarly 0.52 cent per ton-mile, when the Grand Rapids & Indiana rate would have given it \$2,310,000 more, and instead of lacking \$458,100 of meeting its fixed charges, it would have been able to pay a dividend of 38 per cent. Its lack of business principle caused it to accept a rate which was one-fourth lower than that which the Pennsylvania people ignobly put up with, so that if it had only done as well as the latter, it would have earned \$656,280 more, which would have prevented a deficit, and left 3 per cent. for the stock.

If we go further west, we shall find "business principles" much more prevalent, but in very different degrees. The Chicago & Eastern Illinois, for instance, a line extending from Chicago southward, shows almost a total lack of them by accepting 0.74 cents per ton-mile last year, when the Illinois Central, another line extending from Chicago southward, got 1.31 cents—perhaps because the latter has many English stockholders who insist on managing according to business principles.

If the Eastern Illinois people had collected the Illinois Central rate, they would have made \$933,770 more profits, and could have delighted their shareholders with a 31 per cent. dividend, whereas they actually got nothing at all. Even the Chicago, Rock Island & Pacific, though it made a pretty penny for its stockholders, would have made \$1,728,000 more if it had collected Illinois Central rates, and that would have been \$4.11 per share, which would be a good thing to have. But it is when we compare the Illinois Central or even the Rock Island rates with those of the great lines further south, and find the Wabash accepting 0.802 cent, the Vandalia Line 0.73, the Indianapolis & St. Louis 0.59, and the Ohio & Mississippi 0.70 cent per ton per mile, that we first see the full enormity of the lack of business principles in American railroad management, and the deplorable consequences to railroad proprietors. The Wabash itself, which pays neither stock nor bond holders, would have made \$5,920,000 more profits simply by collecting Illinois Central rates last year, and could have paid interest and rentals when they were heaviest, 7 per cent. on the preferred stock, and had \$190,000 left for the common stock; and the Vandalia Line, even with the Rock Island's rates, could have paid 10 per cent. on both common and preferred stock.

It will be observed that several of these companies are managed by people who have immense fortunes invested in them, and it is hard to explain how men who had "business principles" enough to make these fortunes should appear so destitute of them in managing the property which they have acquired. We make this suggestion for what it is worth: the great railroad managers are really philanthropists bent on giving the public the free use of the railroads, but concealing their purposes to avoid the opposition of the other stockholders, who want dividends. Now that Mr. Taylor has stripped away the veil by which they concealed their philanthropy, let us hope that as they receive the execrations of the shareholders, whose profits they have given to the public, they may enjoy the applause of the public, to whom they have been doing good by stealth, as it were.

September Earnings.

The 104 railroads whose September earnings are given in our large table this week report in the aggregate:

	1886.	1885.	Increase.	P. c.
Miles.	75,553	72,657	2,896	4.0
Earnings.	\$45,672,358	\$41,906,394	\$3,765,964	8.7
Earnings per mile.	605	578	27	4.7

This includes the West Shore road this year and not last, and its earnings may have been as much as \$400,000 in that month, which would make the increase in total earnings 7.7 per cent., and in earnings per mile from \$580 to \$605, or 4.3 per cent.

Of the 104 roads, only 22 show any decrease in earnings, and nearly all of these are small roads, the aggregate mileage of the 22 being about one-ninth of the total mileage reporting. Moreover, the decreases are for the most part small, being in the aggregate only \$292,516, which is a fourth less than the gain by the Pennsylvania alone, and but little more than the gain by the Chicago, Burlington & Quincy. The largest percentages of decrease were 11 per cent. on the Buffalo, Rochester & Pittsburgh, 10 on the Southern Divis-

ion of the Illinois Central, 19½ on the Mobile & Ohio, 27 on the South Carolina Division and 36 on the Greenville & Columbia Division of the Richmond & Danville, 14½ on the Detroit, Lansing & Northern, 16½ on the Central Iowa, 19 on the Denver & Rio Grande Western and 13 on the St. Joseph & Grand Island. On the other hand, there were many large gains, and no less than 45 roads gained more than 10 per cent. in earnings per mile, 30 more than 15 per cent., 25 more than 20 per cent. and 21 more than 30 per cent.

The comparison, however, is not with a favorable month. The 84 railroads reporting for September earned per mile 4 per cent. less than in 1884, and the 79 roads reporting in 1884 earned per mile 10.8 per cent. less than in 1883, when they earned about the same as in 1882. The large gain this year makes good only part of the decrease from 1883 to 1885.

The comparison with last year in successive months of this year has been as follows:

Month.	No. roads.	Miles.	Inc. or Dec. in earnings.	P. c. per mile.	Inc. or Dec. in earnings.	P. c. per mile.
Jan.	84	69,836	-\$2,038,444	6.4	-\$2,038,444	10.3
Feb.	85	69,161	2,549,087	9.3	2,549,087	7.0
March.	89	69,129	852,272	2.5	852,272	0.2
April.	88	68,666	587,731	1.8	587,731	0.3
May.	92	72,400	2,687,618	7.7	2,687,618	4.5
June.	94	72,825	4,230,899	12.1	4,230,899	8.7
July.	94	71,545	5,786,844	16.2	5,786,844	12.7
Aug.	107	77,151	5,964,529	15.0	5,964,529	11.1
Sept.	104	75,553	3,675,964	8.7	3,675,964	4.7

Thus the gain in September was the smallest reported in any month since May. This, however, does not indicate declining earnings this year, but rather improving ones last year, for though the roads did not do well last year in September, they did better in that month than in any of the five months previous, the decrease in their total earnings in 1885, compared with 1884, having been:

April.	May.	June.	July.	Aug.	Sept.
\$2,095,781	\$2,401,597	\$749,178	\$938,112	\$2,592,225	\$336,284

This shows that the gains this year over 1884 were about as large in September as in August. The comparison after September will be with still more favorable months, so that much smaller gains than any since April will still indicate good earnings.

The following table, showing the earnings per mile for six years, will indicate what lines have done very well this year compared with any recent year:

	1881.	1882.	1883.	1884.	1885.	1886.
Ala. Gt. Southern.	\$242	\$208	\$342	\$319	\$313	\$360
Buff., Roch. & Pitts.	750	618	637	576	606	606
Burr., C. R. & North.	303	405	365	366	303	301
Canadian Pacific.	278	256	256	269	269	229
Central Iowa.	474	389	231	298	284	238
Charlotte, Col. & Aug.	233	209	211	174	215	157
Chesapeake & Ohio.	568	643	707	583	616	775
Chicago & Alton.	982	1,074	1,100	1,070	889	908
Chicago & El.	686	683	617	611	673	665
Chicago & N. W.	753	736	709	624	664	663
Chicago & W. Mich.	341	354	346	302	283	312
Chic. Burl. & Quincy.	714	677	891	794	738	709
Chic., Mil. & St. Paul.	431	445	488	458	461	512
Chic. St. P. M. & Om.	389	502	428	406	455	461
Cia., Ind. St. L. & Chi.	666	777	731	726	641	726
Cia., N. O. & Tex. Pac.	724	714	723	718	718	729
Cin., Wash. & Bell.	711	757	682	533	725	725
Cleve., Akron & Col.	279	349	376	323	343	359
Columbia & Greenville.	313	219	173	214	138	138
Denver & Rio Grande.	513	431	306	432	480	480
Des Moines & Ft. Dodge.	566	227	201	303	285	248
Det., Lansing & North.	542	617	600	463	492	421
E. Tenn., Va. & Ga.	329	355	350	396	337	354
Edm., Lex. & Sta. Sand.	441	618	583	538	528	739
Evansville & Terre H.	487	480	459	475	469	446
Font. & Pere Marquette.	478	540	590	476	463	493
Florida Ry. & Nav.	133	162	157	121	120	128
Ft. Worth & Denver.	385	364	364	276	294	294
Grand Trunk.	640	595	498	433	507	507
Gulf, Col. & Santa Fe.	453	426	346	394	313	313
Ill. C'n., Ill. lines.	704	713	740	620	646	670
Ind. C'n., Iowa lines.	454	481	502	614	416	454
Ill. Cen. South. Div.	592	491	581	562	448	494
Ind., Bloom. & West.	447	393	421	461	456	476
K. C., Ft. Scott & Guff.	464	445	501	493	512	544
K. C., Fpr. & Memphis.	332	375	375	375	375	375
Little Rock & Ft. Smith.	258	258	267	293	355	355
Lake Erie & West.	322	394	383	377	313	326
Long Island.	638	736	810	885	802	913
Louisville & Nashville.	517	510	646	555	508	622
Marquette, H. & Ont.	1,531	1,562	1,288	745	732	735
Memphis & Charleston.	347	378	360	341	414	414
Milwaukee & Northern.	211	204	204	204	252	252
Mt. Lake Shore & W.	260	302	301	254	286	455
Mobile & Ohio.	416	209	352	305	280	238
Nash. Chatt. & St. L.	517	353	367	367	333	367
N. Y. & New England.	841	897	704	897	907	907
N. Y., Susq. & West.	617	617	617	617	702	672
New Orleans & N. E.	93	139	235	235	235	235
Norfolk & Western.	517	544	571	537	524	626
Northern Central.	1,318	1,732	1,695	1,481	1,568	1,469
Northern Pacific.	550	596	505	508	455	494
Ohio & Mississippi.	700	809	581	560	639	639
Ohio Southern.	279	298	357	454	408	408
Pennsylvania.	1,910	2,231	2,299	2,045	1,886	1,997
Peoria, Dec. & Ev.	283	258	286	294	312	354
Phila. & Reading.	1,954	2,031	2,137	1,844	1,795	1,878
Richmond & Danville.	432	450	479	446	389	382
St. Louis, Alton & T. H.	667	672	727	581	705	681
Main Line.	543	692	585	451	546	557
St. Louis & San Fran.	433	510	502	597	485	562
St. L., Ark. & Tex.	372	613	679	670	707	907
St. Paul, Minn. & Man.	561	786	576	511	503	544
South Carolina.	476	499	538	444	461	414
Vicksburg & Meridian.	244	320	292	258	255	255
Vicks., Shreve. & Pac.	206	206	206	206	235	201
Virginia Midland.	462	527	483	471	471	471
Wash. & N. Carolina.	491	493	580	533	562	562
West Jersey.	631	597	590	695	626	669
Wisconsin Central.	188	212	272	256	273	292

Examination of this table shows that 16 of these roads had larger earnings per mile this year than in any other of the six. Most of these are not very large roads, but some of them are old, the growth not being confined to new roads with very light earnings which must grow to do tolerably well. The greatest of the roads whose earnings per

mile were greatest this year is the Chicago, Milwaukee & St. Paul. Others of importance are the Chesapeake & Ohio and its connection, the Elizabethtown, Lexington & Big Sandy, the Cincinnati, New Orleans & Texas Pacific, the Indiana, Bloomington & Western, the Kansas City, Springfield & Memphis (whose earnings are already much above the average of Southern railroads), the Long Island, the Memphis & Charleston, the Milwaukee, Lake Shore & Western, the New York & New England, the Norfolk & Western and the St. Paul & Duluth. On the other hand, 13 railroads made smaller earnings per mile this year than in any other since 1880 at least.

In several cases this is due largely, if not wholly, to additions of road with light earnings, but not in all. The roads whose earnings per mile were lightest this year are the Burlington, Cedar Rapids & Northern, the Canadian Pacific, the Chicago, Burlington & Quincy, the Charlotte, Columbia & Augusta, the Columbia & Greenville, the Detroit, Lansing & Northern, the Evansville & Terre Haute, the Gulf, Colorado & Santa Fe, the Southern lines of the Illinois Central, the Mobile & Ohio, the South Carolina, and the Richmond & Danville, while the Northern Central's earnings per mile were the smallest since 1881.

More significant than this, perhaps, is the number of roads which, though they have a gain and some of them a large gain over last year, earned less than in 1884 or 1883, among which are the Atchison, Topeka & Santa Fe, the Chicago & Alton, the Cincinnati, Indianapolis, St. Louis & Chicago, the Cincinnati, Washington & Baltimore, the Flint & Pere Marquette, the Grand Trunk, the Lake Erie & Western, the Marquette, Houghton & Ontonagon, the Ohio & Mississippi, the Pennsylvania, the Reading, the Manitoba and the Virginia Midland. That is, there has been a great and pretty general recovery from the very poor earnings of last year, without, in many cases, reaching the earnings of positively prosperous years.

October Earnings.

The reports of 51 railroads that have reported for October show:

	1886.	1885.	Increase.	P. c.
Earnings.....	\$24,382,914	\$23,550,681	\$832,233	3.5

The gain is much more moderate than in September, when 104 railroads gained in the aggregate 8.7 per cent., but this was because October was a favorable month and September an unfavorable one last year. Then the October earnings of 84 railroads were \$1,142,748 more than in 1884, while their September earnings were \$336,284 less than in 1884. Many roads were doing very well indeed last year in October, and their reports are favorable where they show small gains this year. This aggregate does not include the New York Central, which includes the West Shore this year but not last, and thus shows an increase of \$944,874, or 42 per cent. The West Shore could hardly have earned more than \$450,000 in October last year. Crediting with that sum, the gain by the two roads was \$494,874, or 18 per cent.

Of the 52 roads reporting, 13 have some decrease in earnings this year, but most of the decreases are quite small. The gains also are not very large in most cases, the exceptions being 32 per cent. by the Chicago & Atlantic, 25 by the Cincinnati, Washington & Baltimore, 15½ by the Grand Trunk, 20½ by the Norfolk & Western, and 18½ by the Peoria, Decatur & Evansville.

The October earnings of some of these roads for five years have been:

	1882.	1883.	1884.	1885.	1886.
Chic & Alton.....	\$858,674	\$901,619	\$889,037	\$777,046	\$707,953
Chc. & E. Ill.....	176,305	145,021	156,577	175,931	173,996
Chc. & N. W.....	2,091,445	2,793,991	2,523,843	2,878,408	2,700,800
C. St. P., M. & O.....	548,852	673,830	642,460	699,884	648,700
Cin. N. O. & Tex. P.....	240,384	260,333	242,381	220,206	250,778
Cin. W. & B.....	181,325	189,296	168,604	152,941	191,579
Det., L'n. & N.....	149,570	169,780	133,100	130,846	115,744
E. T., Va. & G.....	386,216	455,593	412,289	400,270	438,950
Ev. & Terre H.....	72,153	65,773	63,759	66,377	68,878
Flint & P. M.....	169,068	257,779	188,007	178,719	185,599
Grand Trunk.....	1,463,692	1,633,592	1,477,137	1,318,817	1,501,024
Ill. & So. Div.....	1,107,077	1,183,468	1,078,544	1,082,735	1,106,942
In Iowa.....	246,194	210,842	184,867	168,017	188,828
Ind., Bl. & W.....	281,140	270,941	228,500	227,116	245,346
Long Island.....	195,495	214,584	213,886	225,805	237,509
Louis. & Nash.....	1,215,033	1,504,465	1,291,714	1,274,439	1,399,015
Mobile & Ohio.....	267,435	256,371	212,459	253,956	212,075
Norfolk & West.....	277,318	331,210	288,405	262,394	317,021
Ohio & Miss.....	457,335	410,999	354,880	370,006	382,340
Ohio Southern.....	40,603	37,199	46,313	52,130	54,993
Peoria, D. & C.....	62,415	66,845	61,522	67,024	79,389
Rich. & Danville.....	421,766	429,834	429,179	425,516	431,141
Va. Mid.....	167,017	170,167	167,585	152,939	155,134
West. N. C.....	248,897	44,066	41,513	46,771	52,569
S. C. Div.....	99,125	98,205	96,753	95,477	87,421
Gr. & Col. Div.....	13,806	86,247	98,019	88,737	67,302
St. P., M. & M.....	974,051	941,261	1,014,862	1,004,789	945,998
Wabash.....	1,595,080	1,712,830	1,466,294	1,189,000	1,237,000
Wis. Cen.....	100,114	138,503	143,607	144,429	

Here most of the roads which earned more than last year also earned more than in 1884, and compared with that year the October earnings are more favorable than the September earnings. The Wabash for

the first three years worked about 1,400 miles more than it is now working, and in all probability its lines reporting this year earned more than ever before.

The trunk line through shipments of freight from New York in October were very much smaller than last year, and not much different from those of 1884 and 1883. They are not definitely known, because the Baltimore & Ohio carried part of the month by way of the New Jersey Central, and does not report its freight. It is known, however, that it is carrying very little—probably much less than its old proportion in the pool, not being fully prepared for the business as yet.

The shipments by the reporting lines, subject to a small correction for this year, have been in October:

	1880.	1881.	1882.	1883.	1884.	1885.	1886.
86,858	142,474	118,840	91,418	92,254	117,191	91,561	

If the Baltimore & Ohio carried as much as was formerly allotted it, which it almost certainly did not do, the total shipments by the lines reporting in previous years were but 100,000 tons last October, which is one-seventh less than last year, and about one-eleventh more than in 1883 and 1884. Business was very active last year in October, but it has seemed so good this year that the decrease in shipments is somewhat surprising.

The Recent Grain Movement and the Prospect for the Winter Movement.

The grain movement continues to grow lighter, and the receipts in the Northwestern markets in the last week of October were the smallest since harvest and their shipments the smallest since July 24. The comparison with previous years, which was so favorable in August and September, is no longer so. Thus the average weekly receipts of all grains at the Northwestern markets in July, August and September and the actual receipts in successive weeks of October for the last five years have been in thousands of bushels:

	July.	Aug.	Sept.	Oct. 9.	Oct. 16.	Oct. 23.	Oct. 30.
1886.....	5,971	7,981	8,188	7,711	6,777	6,205	5,639
1885.....	3,910	5,303	6,550	6,247	6,867	6,483	6,110
1884.....	3,601	7,237	8,219	7,614	7,250	8,042	6,759
1883.....	3,476	6,882	8,869	8,016	7,302	6,259	6,257
1882.....	4,438	5,760	5,821	5,603	5,033	4,566	6,279

Thus the July movement and the August movement was much larger this year than in any of the other four years; the September movement was a fourth more than last year and was much exceeded only in 1883; on the other hand, the receipts were less in October than in 1883 and in 1884, in the last two weeks of October less than in any other year since 1882, and in the last week of October smaller than in 1882 even. The comparatively light movement now, however, is only the legitimate consequence of the exceptionally heavy movement earlier in the season. The decrease is chiefly in corn, the wheat receipts in the last week of October having been a little greater than the week before, Duluth having larger receipts than for two weeks previous and 38 per cent. of the total Northwestern wheat receipts, Chicago following with 22½ per cent.

The extraordinary receipts at Duluth since harvest is shown below by comparison with previous years in bushels:

	August.	Sept.	Oct.	Three months.
1886.....	1,412,491	6,414,351	3,586,477	11,413,319
1885.....	478,194	2,852,047	2,489,529	5,819,770
1884.....	161,567	3,228,455	3,101,488	6,591,510
1883.....	6,298	1,327,931	2,017,963	3,406,242
1882.....	182,322	424,321	946,985	1,553,628
1881.....	93,758	456,668	804,770	1,355,196
1880.....	300,978	924,861	745,438	1,971,277

When we remember that all accounts agree in making the wheat crop of North Dakota and Northwestern Minnesota somewhat less this year than last, and that heretofore nearly all the Duluth receipts have come from the territory named, the enormous increase in its receipts this year is astonishing. It is to be said, however, that the Minneapolis mills usually take all they want of this wheat, which is usually of very superior quality, and when wheat of the kind which they want is scarce further south they take nearly all the North Dakota production, which is shown by the comparatively small receipts for some years after the North Dakota production had become very large. Should they be able to get plenty of wheat elsewhere, a very much larger proportion of the Northwestern crop goes to Duluth.

The total crop movement since harvest has been very large; for the four months ending with October the movement has been, in bushels:

	Northwestern.	Atlantic.
Year.....	Receipts.	Shipments.
1880.....	130,958,465	106,092,474
1881.....	104,624,411	84,413,948
1882.....	91,322,141	70,942,040
1883.....	116,773,617	87,110,450
1884.....	95,247,319	77,992,357
1885.....	119,981,531	85,921,314

Thus the receipts of the Northwestern markets for the four months were larger this year than in any other except 1880, and 26 per cent. more than last year. The shipments from these markets, however, though nearly 10 per cent. more than last year, were less than in 1884 and 1883, as well as 1880. The Atlantic receipts were 28 per cent. more than last year and the largest since 1881, but were 42 per cent. less than in 1880.

Altogether the movement has been so large since harvest, that it will not be remarkable if in the remainder of the year it is less than in several years, especially in the receipts of the Northwestern markets. But the stocks accumulated at those markets are so large that the probabilities are against a light movement from those markets. There will be shipments by lake only for about two weeks more, and the press-

ure at Duluth is so great that two weeks ago all vessels offering were taken at 7½ cents a bushel to carry wheat to Buffalo. The stocks at the principal markets at the end of October this year and last were reported as follows:

	1886.	1885.
Chicago.....	14,861,464	14,769,086
Milwaukee.....	3,012,343	2,900,365
Duluth.....	7,998,275	1,766,356
Minneapolis and St. Paul.....	4,247,619	5,880,900
St. Louis.....	3,361,221	3,222,367
Toledo and Detroit.....	6,018,824	4,385,494
Total.....	42,499,656	33,013,568

Thus these markets have nearly 30 per cent. more grain than a year ago, when the quantity was nearly or quite unprecedented. Substantially the whole increase is at Duluth, where it consists wholly of spring wheat, and at St. Louis, Toledo, and Detroit, where it consists mostly of winter wheat, the stocks of corn, though four times as great as last year, amounting only to 1,142,000 bushels at these three markets. At Chicago also the corn in store is nearly four times as great as last year; but it is remarkable that, though the total wheat crop was nearly 30 per cent. larger this year than last, the wheat in store at Chicago is 3,640,000 bushels (28 per cent.) less than last year, and the total stock of wheat at the above named markets, together with Kansas City, is 35,386,030 bushels, against 31,429,000 bushels last year; and omitting the exclusively spring wheat markets, Minneapolis, St. Paul, Duluth and Milwaukee, the stock is 20,329,000 bushels this year against 21,370,000 last year.

That is, the whole gain has been at the spring wheat markets, though there has been no increase in the crop of spring wheat. This is due largely, no doubt, to the fact that Chicago, which receives both spring and winter wheat, this year has not received much of either, and especially very little spring wheat, and that the winter wheat was sent through to the East or to Europe unusually early.

While the large stocks in Western elevators make it improbable that shipments will be very light for some weeks yet; they by no means insure a heavy grain movement through the winter. The wheat rarely makes a great figure in the movement after Christmas, and even more than usual seems to have been marketed already. The winter movement will depend chiefly on the shipments of corn. The crop this year is probably about 268 million bushels less than last year, but the stocks on hand, after two exceptionally large crops, ought to be unusually large.

It is noticeable, however, that the receipts of corn at the Northwestern markets for the ten months ending with October have not been at all in proportion to the increase in production, the receipts and crop from which they came having been in millions of bushels:

	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.
Receipts.....	92,8	134,5	117,5	98,8	117,5	98,8	117,5	134,5
Crop.....	1,740,0	1,755,0	1,717,0	1,191,0	1,610,0	1,551,0	1,750,0	1,930,0

Thus with a production 141 millions greater to draw from, the receipts were a little less this year than last; only 3.2 millions more than in 1884, when the production was 385 millions less, and 15.8 millions less than in 1883, in spite of the increase of 319 millions in production. The fact is that the part of this crop which goes to market is so small a proportion of the whole that there may be very little correspondence between production and movement, as was perhaps shown most clearly when the reduction of the crop by 523 millions from 1880 to 1881 reduced the Northwestern receipts but 51 millions. Moreover, the fact that corn is raised in all parts of the country, and almost everywhere chiefly for home consumption, makes it much more difficult to collect accurate statistics of it than of the wheat or cotton crops, the movement of which, especially in the case of cotton, affords a check on the estimates of production, which prevents them from getting very much out of the way, as otherwise comparatively small yearly errors might make them when several years have elapsed since an accurate determination by a census. This was shown very clearly by the fact that the Statistician of the Department of Agriculture estimated the corn crop of 1879 to be 1,545 millions of bushels, while the same man in charge of this branch of the census found it to be 1,755 millions, an error of 210 millions, which was doubtless the accumulation of yearly errors since the census of 1870—a slight yearly underestimate of the percentage of increase in area. At the same time the census found only 459½ millions of wheat, while the estimate before the census was taken was 449 millions. Unless the recent estimates of the corn crop have been very much out of the way, however, the interior consumption of this country has increased faster than the production, which tends to lessen the movement; but there is also no doubt that the movement which escapes record entirely, as from Kansas and Nebraska to Illinois and adjacent states to feeders, has increased immensely within a few years, so that the receipts at Chicago, for instance, do not show the whole movement over the railroads whose eastern termini are at Chicago.

So far as the movement to these markets is concerned, and a little later the movement to the seaboard, it does not seem probable that the in the coming winter it will be as large as last year, unless there should be some considerable advance in prices. The grain movement, however, is not so important to the carriers as it was a year ago, because other traffic is now active and seems likely to remain so.

Union Pacific Earnings in September.

The gross and net earnings and working expenses of the Union Pacific Railway system in September for the last seven years have been:

Year.	Gross earnings.	Expenses.	Net earnings.
1880.....	\$2,448,613	\$1,080,911	\$1,367,702
1881.....	2,037,620	1,264,927	1,772,693
1882.....	3,092,462	1,180,337	1,912,125
1883.....	2,881,640	1,443,214	1,438,426
1884.....	2,486,836	1,236,433	1,250,403
1885.....	2,518,822	1,324,881	1,193,941
1886.....	2,517,972	1,606,711	911,261

The gross earnings this year were nearly the same as last year and 1 1/4 per cent. more than in 1884, but very much less than in any of the other three years since 1880, when but 2,854 miles of road were worked, against 4,519 this year. The working expenses were larger this year than ever before and 20 1/2 per cent. more than last year; while the net earnings, which have decreased steadily since 1882, were the smallest of the seven years, \$272,160 (23 per cent.) less than last year, and not half as great as in 1882.

For the nine months ending with September, the earnings and expenses have been:

Year.	Gross earnings.	Expenses.	Net earnings.
1880.	\$18,181,001	\$8,543,885	\$9,637,116
1881.	20,005,500	11,061,138	8,944,362
1882.	21,403,076	10,938,324	10,464,752
1883.	20,819,800	10,953,131	9,866,669
1884.	18,274,754	11,177,961	7,096,793
1885.	18,378,773	11,884,427	6,494,346
1886.	19,153,669	13,008,428	6,145,241

The gross earnings for the nine months were considerably larger this year than last year and the year before, but from 8 to 10 1/2 per cent. less than in the three years from 1881 to 1883; but the increase in working expenses has been so great that the net earnings were less this year than in any other of the seven. The decrease in them from last year is only \$349,400 (5.4 per cent.), but the decrease from 1882 is \$4,319,501, or 41 per cent.

The larger part of the immense decrease in net earnings was made in one year, from 1883 to 1884, amounting for these nine months to \$2,770,381 (28 per cent.). They have continued to fall since, but much less rapidly, the decrease in the two years since 1884 having been only about one-third of the decrease in that year. The large increase in mileage has made this decrease the more notable, the net earnings per mile having been for the nine months:

1880.	1881.	1882.	1883.	1884.	1885.	1886.
\$3.377	\$3.103	\$2.880	\$2.393	\$1.606	\$1.451	\$1.363

In 1880 the net earnings per mile were 2 1/2 times as great as this year, in 1882 more than twice as great, while the decrease from 1884 is 15 per cent. and from last year 6 per cent.

The earnings of this road are largest either in September or October, but usually in October.

Chicago, Burlington & Quincy Earnings in September.

The Chicago, Burlington & Quincy, like the roads further north, illustrates in its earnings the earliness of the crop movement this year. Its August report showed an increase over last year of no less than \$523,872 (23 1/2 per cent.) in gross earnings, but in September the increase was only \$84,553 (3.2 per cent.). Yet the earnings were very nearly as large in September as in August this year. Always before the September earnings have been the larger, and usually much the larger—exceeding the August earnings by \$414,000 in 1883, \$260,000 in 1884, and by \$416,000 last year, while this year they are smaller by \$23,587.

The mileage, gross and net earnings and working expenses of the road in September for the last seven years have been:

Year.	Miles.	Gross earnings.	Expenses.	Net earnings.
1880.	2,712	\$1,862,384	\$873,452	\$1,024,832
1881.	3,108	2,262,981	1,017,329	1,245,652
1882.	3,328	2,186,400	954,463	1,231,937
1883.	3,324	2,900,165	1,349,014	1,551,151
1884.	3,467	2,707,110	1,121,778	1,585,332
1885.	3,576	2,640,035	1,143,203	1,496,832
1886.	3,840	2,734,588	1,131,244	1,593,344

Thus the gross earnings this year were exceeded only in 1883, the working expenses in 1883 and 1885, while the net earnings were larger than in any previous year, but only a very little more than in 1883 and 1884, while there has been an increase of about one-sixth in the mileage since 1883.

Compared with last year there is:

An increase of \$84,553, or 3.2 per cent., in gross earnings.
A decrease of 11,959, or 1.0 " " in expenses.
An increase of 96,512, or 6.4 " " in net earnings.

For the nine months ending with September the gross and net earnings and working expenses of this company have been for seven years:

Year.	Gross earnings.	Expenses.	Net earnings.
1880.	\$15,129,853	\$7,042,726	\$8,087,127
1881.	15,424,831	7,891,905	7,532,926
1882.	15,033,870	8,161,732	6,872,138
1883.	18,634,107	9,591,577	9,042,530
1884.	18,505,825	9,789,722	8,716,103
1885.	19,070,140	10,630,465	8,439,675
1886.	19,326,863	10,191,187	9,135,676

Thus the gross earnings were larger this year than ever before, the expenses less than last year, and the net earnings also larger than ever before, though only about 1 per cent. more than in 1883. Compared with last year there has been:

An increase of \$276,723, or 1.5 per cent., in gross earnings.
A decrease of 400,405, or 3.9 " " in expenses.
An increase of 685,941, or 8.1 " " in net earnings.

The increase in net earnings is equal to about 90 cents per share of stock outstanding.

This road's lines are in both the winter and the spring wheat regions, but chiefly in a spring wheat country, and there must be a great deal less wheat for it to carry than there was last year. Wheat, however, is much less important to it than corn, which is the great crop on its whole system. In 1885 it brought 4,121,000 bushels of wheat and 28,634,000 of corn to Chicago, besides carrying a vast amount of corn that did not go to Chicago.

Now the corn crop in the states from which it carries is estimated as about 823 millions this year, against 965 millions last year, a decrease of 21 per cent. In Nebraska, from which it is the chief corn carrier and on whose product it gets the longest haul, the decrease is 27 millions, or about 21 per cent. Thus, so far as the crops are concerned, the prospect for traffic on this railroad is decidedly less favorable than last year, and the building of lines by other companies in Nebraska south of the Platte is likely to lessen somewhat the share of the traffic which it has usually had there. But there has been such a growth in industries other than agricul-

tural that it is doubtful if the lighter grain movement which seems probable will prevent an increase in earnings, especially as there will be a very considerable addition to the mileage (chiefly in Nebraska) this year, which will begin to affect earnings next year.

The perennial report that the Lehigh Valley Company is about to build a line of its own to Pittsburgh reappears at considerable length in the daily papers this week. The usual denial from the President of the company follows as a matter of course, although it was hardly needed. The Lehigh Valley is not at all likely to build a line to Pittsburgh as long as its present relations with the Pennsylvania Railroad Company continue, and the only new road which it might be expected to build in Pennsylvania is a comparatively short branch to reach the bituminous coal property which it owns in the Snow Shoe Region. Its present connections with Buffalo supply a sufficient outlet for its western anthracite trade, and a better one than a Pittsburgh line could give. There are several paper projects for new lines across Pennsylvania, and the endorsement of a strong company like the Lehigh Valley would be of such value to the projectors, that even a rumor of such a connection is desirable. This is probably the origin of these reports, which are brought forward regularly two or three times a year.

The atrocious extent to which watering stock is often carried has been again illustrated by the action of the Westinghouse Air Brake Co. in this direction, which goes far beyond any efforts in that line by railroad companies which we recall. In addition to sending out checks for a cash dividend of 50 per cent. on its old capital stock of \$600,000 a stock dividend of four hundred per cent., increasing the capital stock from \$600,000 to \$3,000,000 has been declared. The company would probably make some weak claims, if it were put on its defense, that the money was earned, whatever it was, and that as the cash dividend represented less than 0.1 cent per mile for each train run with its brakes and would be no larger or smaller whatever the nominal stock capital, the public was making far more than the company did from the Westinghouse brake, but the weakness of such arguments is evident to a great many people—who are not stockholders.

The near approach of the close of navigation has not caused an advance in lake rates on grain from Chicago and Milwaukee to Buffalo, or in canal rates to New York, but it has greatly advanced the lake rates on grain from Duluth and on ore from Lake Superior ports and from Escanaba, and for very good reasons; for when the lakes are closed the rail rate on grain from Chicago to New York is not likely to be more than 3 or 4 cents a bushel more than the present lake and canal rate, while from Duluth it will probably be 8 to 11 cents greater, and the iron ore cannot be taken at all from Lake Superior by rail at rates which the furnaces can afford to pay. There is said to be a scant supply of ore at Cleveland and the other Lake Erie ports where the furnaces of the Mahoning and Pittsburgh regions get their supply, and this has made a great demand for vessels for the remainder of the season, one of the consequences of which is that few can take cargoes from Chicago and Milwaukee, and stocks are likely to grow larger rather than smaller there up to the close of navigation.

Record of New Railroad Construction.

Information of the laying of track on new railroad lines is given in the current number of the *Railroad Gazette*, as follows:

Atchison, Topeka & Santa Fe.—Extensions amounting to 73 miles in all are reported on new branches in Kansas.

Central Pacific.—The Oregon Division is extended northward to Sisson, Cal., 15 miles.

Chicago, Milwaukee & St. Paul.—On the *Kansas City Extension* track is laid to a point twenty miles southwest from Ottumwa, Ia., an extension of 10 miles. On the *Sioux City Branch* track is extended southeast to the Monona County line, 18 miles.

Grand Rapids & Indiana.—The *Muskegon Branch* is completed by laying track from Berlin, Mich., to Ravenna, 7 miles.

Green Pond, Wallerboro & Branchville.—Track laid from Branchville, S. C., south 5 miles.

Mason City & Fort Dodge.—Extended east by north to Mason City, Ia., 46 miles.

Minneapolis & Pacific.—An addition of 95 miles of track at different points is reported.

Minneapolis, Sault Ste. Marie & Atlantic.—Extended eastward to Brady, Wis., 15 miles.

Missouri Pacific.—The *Council Grove, Osage City & Ottawa Branch* is extended west to Admire, Kan., 18 miles. The *Paola Branch* is completed from Paola, Kan., north 15 miles. The *Greenville & Dallas Branch* is extended southward to Rockwall, Tex., 16 miles.

Northern Pacific.—A branch is completed from Rathdrum, Idaho, north to Coeur d'Alene City, 13 miles. Track is laid on the *Duluth & Manitoba Branch*, from Hawley, Minn., north 20 miles.

Ohio River.—Track laid to a point forty-four miles northward from Point Pleasant, W. Va., an extension of 9 miles.

Orange Belt.—Extended from Longwood, Fla., southwest to Oakland, 26 miles.

Oregon Railway & Navigation Co.—The *Centerville Branch* is extended from Centerville, Or., northeast to Weston, 9 miles.

Portland & Willamette Valley.—Track laid from Chehalis Gap, O., south 6 miles.

Sebastecook & Moosehead Lake.—Extended northward to Hartland, Me., 10 miles.

Sanford & Lake Eustis.—Track laid from Sanford, Fla., west 15 miles.

Toledo & Ohio Central.—A branch is completed from Sedalia, O. to coal mines, 2 miles. (This was accidentally omitted last week.)

Zanesville & Ohio River.—Track laid from Zanesville, O., southward to Malta, 27 miles.

This is a total of 470 miles on 22 lines, making 5,484 miles reported so far this year. The new track reported to the corresponding date for 15 years has been:

	Miles.		Miles		Miles.
1886	5,484	1881	6,341	1876	1,970
1885	2,283	1880	5,056	1875	1,150
1884	3,246	1879	3,024	1874	1,064
1883	5,410	1878	1,840	1873	3,288
1882	9,102	1877	1,892	1872	6,302

This statement covers main track only, second or other additional tracks and sidings not being counted.

NEW PUBLICATIONS.

The Professor in the Machine Shop. Egbert P. Watson & Son, New York.

This little volume is made up of a series of chatty articles, reprinted from the *Mechanical Engineer*, in which the learning of a very practical professor and the practice of a very learned set of workmen—or at least a set who are very hungry after learning—are caused to flow together in one placid stream of conversation on matters and things in general and shop practice in particular. It is not badly done, and the element of human interest thrown into the bald details of mechanical work should make it both pleasant and profitable reading for those who lack the aptitude or inclination to acquire knowledge in some harder but more comprehensive way.

TECHNICAL.

Progress of the Edison Electric Lighting System.

The Edison Electric Light Co. has recently announced by circular that there are in every-day use to-day about 400,000 Edison lamps, of an average of 16 candles each. Reduced to a gas basis for the purpose of comparison, this would appear thus: 400,000 lamps 16 candles each, is equal to 400,000 3-ft. gas jets, or 57,600,000 cubic ft. per day. The official returns show that the total capacity of the eight gas companies supplying New York city is 38,000,000 cubic feet per day. Hence the daily light-producing capacity of the Edison apparatus in use in the United States, whether expended in light or power, is more than 50 per cent. greater than that of the entire combined gas plants of New York city.

The returns for ten months from Oct. 1, 1885, to Aug. 1, 1886, exhibit the following percentages of increase:

Per cent.	Increase.
Isolated plants.	35
Lamps in same.	36
Central station plants.	132
Lamps in same.	126

Capacity of European Locomotive Shops.

European countries are said to range as follows in respect to their yearly productive capacity in locomotives: Great Britain, 2,200; Germany, 2,000; France, 1,000; Belgium, 500; Austria-Hungary, 400; Switzerland, 120; Italy, 70; Sweden, 50; Russia, 40; Holland, 20; total, 6,400. The greatest locomotive works in the world, the Baldwin Works, of Philadelphia, can produce 600 locomotives annually, while the Borsig Works, in Berlin, had a capacity of 300.

The Demand for Car and Bridge Timber.

A correspondent of the *Northwestern Lumberman* says: "I am informed that one Toledo lumber concern is 1,000,000 ft. behind its orders on car material, exclusive of timber. The mill men who are cutting on car timbers are so far behind on orders that they have no hopes of catching up this season. The bridge timber business is just as active. If a timber man consents to fill a bill at all this fall, it will be simply on the basis of a personal favor—at two prices. The European hotel keepers may expect a great influx of American saw-mill gurus next season. Nothing short of a foreign tour will relieve them of their surplus cash."

Blast Furnaces of the United States.

The *American Manufacturer* (Pittsburgh) of Nov. 6, says: "As we go to press we have returns from all of the furnaces of the country but 13, showing their condition Nov. 1. Assuming that the condition of these 13 is the same as it was a month ago the number of furnaces in blast in the country Nov. 1, 1886, and the capacities of the same, are as follows:

	Total Stacks.	In blast.	Capacity.
Charcoal.....	177	63	10,865
Anthracite.....	203	112	32,821
Bituminous.....	218	141	78,990

One month ago 59 charcoal furnaces, with a capacity of 11,371 tons weekly, were in blast, 118 anthracite, with a capacity of 39,476 tons, and 135 bituminous, with a capacity of 77,127 tons."

The Franklin Institute.

The *Philadelphia Ledger* says: "The managers of the Franklin Institute are considering a matter which they have considered on occasions before without being able to come to any decided conclusion. In their old hall on Seventh street, below Market, they have now been domiciled for more than 50 years, during which great changes have taken place in the neighborhood. In 1825, when the corner stone of the Institute building was laid, there was not a quieter street in the city than Seventh, between Market and Chestnut. True there was life and animation fully up to the spirit of the period on Market and Chestnut streets, but Seventh street, between Washington and Franklin Square, was a sort of blind alley, which began nowhere and ended nowhere. The four squares between Walnut and Race streets were set aside, as it might be said, and the busy current of traffic did not run through them. Yet Seventh street, in the quiet neighborhood of the hall of the German Society, between Market and Chestnut, and in the staid vicinity of St. James' Protestant Episcopal Church, above Market street, was quite a respectable avenue, although it was remarkably dull. Things have vastly changed in that neighborhood in the course of half a century. Seventh street is one of the busiest streets in town. The German Society wants to get out of it, and naturally so does the Franklin Institute. Trade overwhelms them. The population has gone west. The great libraries have gone west; change seems to be a necessity."

The Cost of a Rain Storm.

The report of the Old Colony Railroad Co., of Massachusetts, for the year ending Sept. 30 last says: "The great flood of Feb. 12, 1886, in which 8 in. of rain fell upon frozen ground in 24 hours, being nearly one-fifth of the average annual

rainfall, did great damage to the railroad, destroying many culverts and bridges and badly washing the road-bed in many places. There were more than 30 bad breaks in the railroad, all of which were repaired so as to be passable in 48 hours. The extra expense of thoroughly repairing the damage caused by the flood has been, thus far, \$94,644, and considerable loss was suffered by the interruption of business."

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings of the stockholders of railroad companies will be held as follows:

- Baltimore & Ohio*, annual meeting, at the office in Baltimore, at 10 a. m., Nov. 15.
- Boston & Providence*, annual meeting, at the passenger station in Boston, at 11:30 a. m. on Nov. 17.
- Buffalo, Rochester & Pittsburgh*, annual meeting, at the office in New York, Nov. 24.
- Florida Railway & Navigation Co.*, special meeting, at the office in Fernandina, Fla., at noon on Dec. 3.
- Mobile & Ohio*, annual meeting of debenture holders, at the office of the company, No. 11 Pine street, New York, Nov. 20, at noon.
- Old Colony*, annual meeting, at the United States Hotel in Boston, at 10:30 a. m. on Nov. 23.
- Peoria, Decatur & Evansville*, special meeting, in Peoria, Ill., Dec. 20.
- Richmond & Danville*, annual meeting, at the office in Richmond, Va., Dec. 8, at noon. Transfer books close Nov. 8.
- Richmond, Fredericksburg & Potomac*, annual meeting, at the office in Richmond, Va., Nov. 17, at noon.
- Richmond & West Point Terminal Co.*, special meeting, in Richmond, Va., Nov. 19.

Dividends.

Dividends on the capital stocks of railroad companies have been declared as follows:

- Boston, Concord & Montreal*, 2½ per cent., semi-annual, on the preferred stock, payable Nov. 15 to stockholders of record on Nov. 5.
- Chicago & Alton*, 2 per cent., quarterly, payable Dec. 1, to stockholders of record on Nov. 15.
- Cleveland & Pittsburgh*, 1½ per cent., quarterly, payable Dec. 1, to stockholders of record on Nov. 10.
- North Pennsylvania* (leased to Philadelphia & Reading), 2 per cent., quarterly, payable Nov. 25.

Railroad and Technical Conventions.

Meetings and conventions of railroad associations and technical societies will be held as follows:

- The *Association of Railroad Trackmen of North America* will meet at Council Bluffs, Ia., on Thursday, Nov. 25.
- The *Master Car-Builders' Club* holds its regular meetings at the rooms, No. 113 Liberty street, New York, on the third Thursday in each month.
- The *New England Railroad Club* holds its regular meetings at its rooms in the Boston & Albany passenger station in Boston, on the second Wednesday of each month.
- The *Western Railway Club* holds its regular meetings at its rooms in Chicago on the third Wednesday in each month.
- The *Western Society of Engineers* holds its regular meetings at its hall, No. 15 Washington street, Chicago, at 7:30 p. m., on the first Tuesday of each month.

Foreclosure Sales.

The *Michigan & Ohio* road was sold in Toledo, O., Nov. 4, under a decree of foreclosure granted by the United States Circuit Court, and was bought for \$1,000,000 by F. P. Olcott, Samuel Thomas and R. T. Wilson, representing the bondholders. The road extends from Dundee, Mich., to Algonquin, 133 miles, and its trains run over the Toledo, Ann Arbor & North Michigan track from Dundee to Toledo, O., 233 miles. The first mortgage bonds amounted to \$2,628,000 and there were about \$250,000 outstanding in receiver's certificates. A plan of reorganization has been proposed and generally adopted providing for the substitution of stock for the old bonds and the issue of a new mortgage to provide for the construction of a branch into the lumber regions of Northern Michigan.

The *Port Jervis & Monticello* road was sold in Port Jervis, N. Y., Nov. 6, by the receiver, W. H. Clark, under an order issued by the New York Supreme Court. The sale was made to satisfy certain judgments for personal injuries, and the road was sold subject to a first mortgage for \$50,000. The road was bought by George Lea and Mark Samuels, of Port Jervis, for \$20,100, subject as above to the mortgage. Prior to the sale a protest was filed by certain of the stockholders, who claimed that they had not had sufficient notice of the order of the sale. The road extends from Port Jervis, N. Y., to Monticello, 24 miles. Under the management of the Receiver it has earned enough to pay all expenses and interest on the bonds. It is reported that the new owners will extend the line from Monticello to a connection with the New York, Ontario & Western at Fallsburg, which would, it is thought, much increase its value.

The *Lake Erie & Western* road will not be sold until Dec. 13, the United States Circuit Court having issued an order postponing the sale for 30 days from Nov. 13. The order was granted on application of the Bondholders' Committee.

Western Railway Club.

The next meeting of this club will be held in the Grand Pacific Hotel, Chicago, Nov. 17, at 2 p. m. The subjects for discussion are:

1. Locomotive Wheel Centres, and section of Locomotive Tires. This subject will be introduced by Mr. G. W. Stevens.
2. Rules for Interchange of Cars, Nos. 4, 5, 6, 7 and 8. This subject will be introduced by Mr. G. W. Rhodes.

Proposed Railroad Commissioners' Meeting.

The Secretary of the Nebraska Railroad Commission has written to the similar bodies in Iowa, Illinois, Minnesota, Wisconsin, Missouri, Kansas, Colorado and Dakota, suggesting the advisability of a convention of the railroad commissioners of these states for the purpose of considering questions of interstate commerce in connection with freight transportation, with the object of evolving "some plan by which many abuses now practiced and much of the imperfect transportation now in vogue on the lines forming the great trunk lines across these states can be brought to a state nearer perfection than now exists."

ELECTIONS AND APPOINTMENTS.

American Society of Civil Engineers.—At the last regular meeting the following elections were announced: Members: Alexander Gordon Brinckerhoff (Stevens Institute, 1877), Engineer and Superintendent for Bates & Johnson Steam-Heating Co., Brooklyn, N. Y.; Chambers McKibbin Craig (Sheffield Sci. School, 1875), Principal Assistant Engineer Macon & Dublin Railroad, Jeffersonville, Ga.; Wilbur Fiske McClure, Engineer Mountain Water Co., Los Angeles, Cal.; William Lawrence Saunders (Univ. Penna., 1876), Engineer Jagersoll Rock Drill Co., New York.

Juniors: Christopher Newton Brown, Assistant Professor Civil Engineering, Ohio State University; Elijah Polhill Butts, Assistant Engineer, Omaha Bridge, Omaha, Nebraska.

Chicago, Rock Island & Pacific.—The authority of T. B. Twombly, General Master Mechanic, and B. K. Verbyck, General Master Car-Builder, is extended over the Chicago, Kansas & Nebraska, this company's new extension west of the Missouri River. Mr. J. H. Kirk is appointed Master Mechanic and Mr. A. J. Blauvelt Master Car-Builder of the Chicago, Kansas & Nebraska Division, with offices at Low, Kansas.

Colorado Midland.—The following circular has been issued by J. J. Hagerman, President: "Mr. D. E. Robinson has been appointed General Manager of the Colorado Midland Railway, with headquarters at Colorado Springs. Mr. Robinson will have general charge of the construction and operation of the road. All officers of the company, excepting the Treasurer and General Solicitor, will report to and take orders from him. This order to take effect Nov. 10, 1886." Mr. J. H. Holway has been appointed Purchasing Agent. He was recently on the New York, Pennsylvania & Ohio.

Duluth, South Shore & Atlantic.—Mr. J. A. Latcha has been appointed Chief Engineer and Superintendent of Construction for the contractors, and has his office for the present in Marquette, Michigan.

Hannibal & St. Joseph.—It is officially announced that Mr. T. J. Potter, Vice-President, will hereafter act as General Manager also, in place of Mr. J. F. Barnard, who has gone to the Ohio & Mississippi.

Kansas City, St. Joseph & Council Bluffs.—Mr. T. J. Potter, Vice-President, will, it is announced, act as General Manager hereafter in place of Mr. J. F. Barnard, who has gone to the Ohio & Mississippi road.

Kentucky & Indiana Bridge Co.—Mr. M. Ford has been appointed Auditor of this company. Mr. A. J. Porter has been appointed Superintendent.

Lake Shore & Michigan Southern.—Mr. Edward Gallup, it is stated, has been appointed General Manager, relieving President Newell, who has for some time acted as General Manager also. Mr. Gallup is now General Superintendent of the Boston & Albany.

Manhattan.—At the annual meeting in New York, Nov. 10, the following directors were chosen: Jay Gould, J. Pierpont Morgan, R. M. Galloway, Cyrus W. Field, Russell Sage, John H. Hall, Chester W. Chapin, George J. Gould, Sidney Dillon, Samuel Sloan, Edward M. Field, Simon Wisner and S. V. White.

Michigan, Indiana & St. Louis.—At the annual meeting in Elkhart, Ind., Nov. 5, the following directors were chosen: D. E. Thomas, E. H. Funk, Toledo, O.; M. D. Kirk, Sturgis, Mich.; John McDonald, White Pigeon, Mich.; J. Mather, Middleburg, Ind.; W. H. Bonslog, H. E. Patterson, Winamac, Ind.; C. W. Hawks, H. V. Mercer, Mercer, W. L. Stoner, Goshen, Ind.; John Lee, Crawfordsville, Ind.; H. W. Beckwith, J. D. English, Danville, Ill.; Z. D. Wiggins, Chicago. The board elected John Lee President; M. Mercer, Vice-President; D. E. Thomas, Secretary; Z. D. Wiggins, Treasurer.

Northern Pacific.—Gen. Adna Anderson, formerly Chief Engineer, has been appointed Second Vice-President, with office at Tacoma, Wash. Ter. He will have special charge of the Pacific Coast divisions of the road.

Orangeburg & Leeward.—The office is at Orangeburg, S. C.; the officers are R. C. Barkley, President; A. S. Hydrick, Vice-President; J. E. Bull, Secretary & Treasurer.

Pullman's Palace Car Co.—The following from General Superintendent T. H. Wickes announces officially an appointment heretofore noted: It is dated Chicago, Nov. 1: "Mr. W. S. Baldwin has been appointed General Agent of the Operating Department of this company, with office at Chicago."

Texas & Pacific.—The following circular from the Receivers is dated Dallas, Tex., Oct. 29:

- "1. The offices of General Superintendent and General Agent are hereby abolished.
- "2. The offices of General Manager, Chief Engineer and Commercial Agent for Louisiana are hereby established.
- "3. George Noble is announced as General Manager.
- "4. Edward A. Garvey is announced as Chief Engineer, and as such will have charge of track, bridges and buildings, and will report to the General Manager; roadmasters will report to the Chief Engineer.
- "5. E. B. Wheelock is announced as Commercial Agent for the state of Louisiana.
- "6. L. L. Keller will resume his duties as Division Superintendent of the Rio Grande Division and T. W. Anderson will resume his former duties as Trainmaster of the Rio Grande Division.
- "7. Superintendents of divisions, chief engineers, Superintendent of motive power and machinery, Superintendent of Telegraph, Purchasing Agent, Stock Claim Agent and the Traffic and Passenger departments will report direct to the General Manager.
- "8. This order to take effect from and after Nov. 1, 1886, excepting as to Acting General Superintendent and Acting Superintendent Rio Grande Division, which will go into effect on and after Nov. 15, 1886."

Toledo, Columbus & Southern.—Mr. H. E. Pilcher is appointed General Freight and Passenger Agent, with office in Toledo, O. He was recently Agent for the West Shore Line in Toledo.

Youngstown & Beaver River.—The directors are Henry O. Bonnell, H. M. Garlick, Henry Tod, Caleb B. Wick and Henry Wick, all of Youngstown, Ohio.

PERSONAL.

—Mr. Thomas McBride, Superintendent of Bridges of the Nashville, Chattanooga & St. Louis, was struck by an engine and instantly killed at Chattanooga, Tenn., Oct. 29.

—Mr. R. C. Briggs, formerly Chief Engineer of the Mexican Central, has gone to Peru, where he will have charge of the completion of the Lima & Rio Railroad, under the new contract.

—A Toledo dispatch says that John Allen, General Ticket Agent, and Thomas H. McLain, Auditor and Cashier of the Toledo, Columbus & Southern Co., have disappeared and have, it is believed, gone to Canada. Their accounts are short about \$10,000.

—Mr. W. S. Baldwin, who recently resigned his office as General Passenger Agent of the Louisville, New Albany & Chicago road to accept a position with Pullman's Palace Car Co., has been presented with a valuable gold watch by the employees of the Passenger Department of his late road.

—Mr. Samuel G. Jones, who died recently at his home in Winchester, Tenn., aged 72 years, was at one time connected with the old Macon & Western road. He built as contractor the extension of the Western Railroad of Alabama, from

Montgomery to Selma, and was afterwards for several years Superintendent of the Mobile & Montgomery road.

—Mr. W. H. Woodin, one of the directors of the Jackson & Woodin Manufacturing Co., died at his home, in Berwick, Pa., yesterday, aged 63 years. Mr. Woodin was one of the pioneer builders of freight cars in his country, and invented many improvements in their construction. He was one of the wealthiest manufacturers in Pennsylvania.

—Mr. Archelaus R. Pharo died suddenly at his residence in Tuckerton, N. J., Nov. 9, aged 73 years. He was a large owner of seaside property and timber lands and was prominent in securing many improvements along the southern part of the New Jersey coast. He was the originator of the Tuckerton Railroad and was president of the company from the time of its organization to the time of his death.

—Mr. Charles H. Borie, for many years a well-known banker in Baltimore, died Nov. 7 at his residence at Torrens-ale, Pa., aged 68 years. Mr. Borie was largely interested in the securities of the Philadelphia & Reading Co. and had conducted many financial operations for that company. Recently he was a member of the Wheel Committee of the bondholders, and was one of the board of reorganization trustees. His brother, the late Adolph E. Borie, was for some years a director of the company.

—Mr. Edward Gallup has resigned his position as General Superintendent of the Boston & Albany Railroad, to accept the office of General Manager of the Lake Shore & Michigan Southern. Mr. Gallup was for a number of years Passenger Agent of the Ohio & Mississippi road in Cincinnati, and was subsequently appointed General Agent in Chicago of the Indianapolis, Cincinnati & LaFayette road. In 1878 he was appointed General Passenger Agent of the Boston & Albany, and in 1882 was made Assistant General Superintendent of that road. About two years ago he was made General Superintendent and has held that position until the present time.

—The Charleston (S. C.) *News and Courier* of Nov. 2 says: "The Roadmasters' Association of America, which held its fourth annual session in St. Louis last week, elected Capt. J. W. Craig, Roadmaster of the Charleston & Savannah Railroad, President of the Association for the ensuing year. This honor will be gratefully worn by Mr. Craig, who is one of the most thorough railroad men of the South, and a cultured gentleman in every sense of the word. Capt. Craig has always been noted for his courteous bearing, and his rise in his profession and the high distinction he has achieved will be a source of gratification to his many friends in Charleston and elsewhere."

—Mr. Norman L. Wagner, only son of the late Senator Wagner, who perished in a sleeping car of his own invention at the terrible accident near Spayten Duvil, Jan. 13, 1881, died of neuralgia of the heart in New York, Nov. 4. The deceased was born Dec. 1, 1846, at Palatine Bridge, and went to school in Boston under the tutelage of Neil Gilmore. At the age of 16 he was put as clerk in the grocery store of his brother-in-law, James Taylor, in the town of his birth. One year later his father brought him to this city and made him Superintendent of the Wagner Palace Car Co. Norman subsequently became Superintendent of the New York Central Sleeping Car Co., and held both positions until a year after his father's death, when he retired entirely from business. Mr. Wagner leaves a widow and two young children.

—Mr. H. M. Hoxie, First Vice-President and General Manager of the Missouri Pacific Railroad, who has been seriously ill in the apartments of Col. Hayes, at the Broadway, New York, is not in so critical a condition as has been reported. Mr. Hoxie, who came to New York late in the summer to place himself under the care of skilled surgeons, underwent a severe operation, and while his condition since has been one of extreme weakness, it has not, up to the past day or two, caused any undue apprehensions on the part of his family. Since Monday of this week, however, new complications have developed which are more feared than are any of the after-effects of the surgeon's knife. Mr. Hoxie's immediate attendants do not express any positive belief that he is in a condition to cause alarming reports. Still, his physicians are in frequent attendance day and night, and he is not able to sit up.

TRAFFIC AND EARNINGS.

Chicago Shipments Eastward.

The Board of Trade reports east-bound shipments from Chicago for the week ending Oct. 30 as follows, in tons:

	Tons.	P. c.		Tons.	P. c.
Chi & Gr. Trunk...	3,981	9.5	Pitts., Ft. W. & C.	7,316	17.5
Vieh Central.....	4,175	10.0	Chi. St. L. & Pitts.	8,170	19.5
Lake Shore	8,628	20.6	Balt & Ohio.....	2,481	6.0
N. Y., Chi & St. L. & A.	4,114	9.9	C. Ind. St. L. & C.	2,928	7.0

The statement includes local as well as through shipments. The total for the week was 41,823 tons, being less by 4,855 tons, or 10.4 per cent., than in the preceding week.

Shipments for seven weeks past by these reports have been, in tons:

Week ending—						
Sept. 25.	Oct. 2.	Oct. 9.	Oct. 16.	Oct. 22.	Oct. 30.	Nov. 6.
36,023	36,122	43,536	41,347	45,840	46,088	41,883

Shipments by the Chicago & Atlantic road are not included above; the through tonnage by that line for the week is given as 4,975 tons.

Cotton.

Cotton movement for the week ending Nov. 5 is reported as follows, in bales:

	1886.	1885.	Inc. or Dec.	P. C.
Receipts...	203,736	199,017	4,719	3.9
Shipments...	13,049	14,680	1,631	5.0
Stock, Nov. 5...	279,684	256,644	23,040	8.9
Exports...	271,665	274,422	2,757	1.0
Exports...	197,037	151,663	45,374	29.6
Stock, Nov. 5...	679,687	600,483	79,204	13.2

The total movement from plantations for the crop year to Nov. 5 is estimated at 2,635,176 bales, against 2,116,825 last year, 1,598,926 in 1884, and 2,183,433 in 1883.

Southern Railway & Steamship Association.

The Board of Arbitration reports action on a number of cases submitted to it, as follows:

1. Miling in Transit, and Classification of Cotton Factory Products and Products of Southern Paper Mills.—Action postponed until next meeting, by request.
2. Differentials between all Ohio and Mississippi River points, including the question of Cairo and Memphis Rates.—No award considered practicable at present.
3. Rates from the West to Anniston, Ala.—The Board decided that rates from Nashville and Ohio River points shall be the same as to Rome, Ga.
4. Coal Oil in Barrels.—When in car-load quantities shall be put in 6th class, released, the same as coal oil in tank cars.
5. Differentials on Cotton as between Atlanta to New Orleans, and Atlanta to Savannah and Charleston.—The Board decides and awards that the differential on cotton from Atlanta to New Orleans, as compared with Atlanta to Savannah and Charleston, shall be 5 cents; that is to say, on present

basis the rates on cotton to New Orleans will be 50 cents per 100 pounds, and on cotton to Savannah and Charleston, 45 cents per 100 pounds.

6. Revision of Cotton Divisions from Atlanta & West Point Railroad and the Western Railroad of Alabama.—Present divisions to continue.

7. Divisions of Atlanta Cotton.—Divisions to be as follows: Central, Georgia and Atlanta & West Point, 44.6; East Tennessee, Virginia & Georgia, 23.3; Richmond & Danville, 20.4; Western & Atlantic, 6.7; Georgia Pacific, 5.0 per cent.

8. Divisions of Cotton at Selma and Montgomery.—Divisions to be as follows:

	Montgomery.	Selma.
East Tennessee, Virginia & Georgia	45	
Louisville & Nashville	42	
Montgomery & Eufrasia and West	36	
Cincinnati, Selma & Mobile	19	

Total..... 100 100

9. Adjustment of Differences as to Montgomery and Selma Pool.—All differences up to Aug. 1, 1884, to be discharged and canceled; differences, Aug. 1, 1884 to Aug. 1, 1885, to be settled finally by payment of \$8,235.

Coal.

Anthracite coal shipments for the week ending Oct. 30 were 830,183 tons. The total shipments for the ten months to Oct. 30, as given by the weekly reports, were this year 29,062,892; last year, 25,313,081; increase, 749,781 tons, or 2.9 per cent. The total output for the year will be little, if any, above last year.

Bituminous coal tonnages for the ten months to Oct. 30 are reported as follows:

	1886.	1885.	Inc. or Dec.	P. c.
Cumberland, all lines	2,209,098	2,305,157	D. 207,159	11.6
Hun. & Broad Top	3,384	133,262	I. 18,372	135.6
Bareilly R. R.	154,898	105,942	D. 47,444	20.9
Beech Creek	826,207	902,715	I. 2,234,92	37.0
Pennsylvania R. R.				
Carnegie	1,781,174	2,29,617	D. 609,443	25.5
Mountain District	561,221	440,049	I. 121,172	28.5
Perry and Westmore	1,017,704	1,034,092	D. 16,298	1.6
Minor districts	1,160,511	881,466	I. 285,245	31.2
Chesapeake & Ohio	967,889	869,313	I. 98,576	11.3
Norfolk & Western	706,125	482,519	I. 223,606	46.3
Total	9,537,841	9,335,302	I. 202,539	2.2

An effort has been made to secure a combination among the companies supplying the seaboard bituminous trade. It has succeeded so far that a meeting is to be held in Baltimore this week.

Coke tonnages for the ten months to Oct. 30 are reported as follows:

	1886.	1885.	Inc. or Dec.	P. c.
Southwest Penna. R. R.	2,158,399	1,568,505	I. 589,894	37.6
Other districts, Pa. R. R.	603,181	513,377	I. 132,704	29.8
CConnellsville, via Pa. R. R.	35,850	58,779	D. 12,889	26.3
Total	2,800,470	2,139,671	I. 720,799	34.3

All these tonnages are over the Pennsylvania Railroad, no other line reporting coke shipments regularly. Coke is peculiarly the fuel of the iron trade, and the large increase in shipments, as might have been expected, has corresponded with the increased activity of that trade throughout the year.

The coal tonnage of the Pennsylvania Railroad Division, Pennsylvania Railroad, for the ten months to Oct. 30 was:

	1886.	1885.	Inc. or Dec.	P. c.
Coal	9,549,468	9,335,302	I. 214,166	2.3
Coke	2,800,470	2,139,671	I. 720,799	34.3
Total	12,349,938	11,474,973	I. 874,965	8.4

This includes all coal and coke passing over the road, whether mined on the line or received from other roads. The details of this tonnage this year are as follows:

Line of road.	From other lines.	Total.
Anthracite coal	1,458,272	3,599,308
Bituminous coal	4,514,708	5,500,393
Coke	2,834,580	2,800,470
Total	8,817,560	12,400,938

Of the total tonnage anthracite coal thus formed 31.9 per cent., bituminous coal 45.0 and coke 23.1 per cent. Of the total tonnage 71.1 per cent. originated on the line of the road. Cumberland coal tonnages for the ten months to Oct. 30 are reported by the Cumberland Coal as follows:

	1886.	1885.	Inc. or Dec.	P. c.
Balt. & Ohio R. R.	1,591,301	1,634,941	D. 43,640	3.8
Belt rd. Div., Penna. R. R.	211,728	344,855	D. 133,127	38.6
Ches. & Ohio Canal	234,909	305,391	D. 70,482	23.1
Total	2,038,028	2,305,157	D. 267,129	11.6

The Baltimore & Ohio tonnage includes local deliveries to points around Cumberland.

The anthracite coal tonnage passing over the Belvidere Division, Pennsylvania Railroad, for the ten months to Oct. 30 was:

	1886.	1885.	Inc. or Dec.	P. c.
Coal port for shipment	60,589	88,753	D. 28,164	3.2
S. Amboy	417,727	467,500	D. 50,033	10.7
Local points on N. J. div.	724,696	704,559	I. 20,137	3.3
Co.'s use	199,616	184,310	I. 15,306	8.3
Total	1,401,398	1,444,212	D. 39,814	2.8

Of the total this year 1,196,386 tons were from the Lehigh Region, and 205,012 tons were from the Wyoming Region.

Actual tonnage passing over the Pennsylvania & New York road for the eleven months of its fiscal year from Dec. 1 to Oct. 30, was:

	1886.	1885.	Inc. or Dec.	P. c.
Anthracite	1,510,886	1,393,879	I. 217,007	19.5
Bituminous	168,856	214,732	D. 50,376	23.5
Total	1,679,742	1,608,611	I. 196,331	13.3

The larger part of the anthracite comes from the Lehigh Valley line, of which this road is an extension.

Chicago coal receipts during October, and to Oct. 31, are given by the Coal Trade Journal as below:

	October.	Ten months.
Anthracite	118,095	1,110,919
Eastern bituminous	113,91	786,361
Illinois	129,338	910,247
Indiana	75,394	553,591
Coke	43,149	415,545
Total	479,407	3,806,433

The decrease for October was 43,452 tons, or 8.3 per cent. for the month, 113,782 tons, or 2.9 per cent.

Cumberland coal shipments for the week ending Nov. 6 were 70,591 tons. Total to November 6 this year, 2,108,618; last year, 2,365,755; decrease, 257,137 tons, or 10.9 per cent.

Pennsylvania Railroad coal tonnage for the week ending Nov. 6 was:

	Coal.	Coke.	Total.	1885.
Line of road	161,632	85 76	246,808	206,809
From other lines	7,774	0 8	74,82	91,434
Total	235,406	85,784	321,190	298,243
Year to Nov. 6	9,847,874	2,613,354	12,461,228	11,745,020

Increase for the week, 22,927 tons, or 7.7 per cent.; increase for the year, 986,108 tons, or 8.4 per cent.

Railroad Earnings.

Earnings of railroad lines for various periods are reported as follows:

Ten months to Oct. 31:

	1886.	1885.	Inc. or Dec.	P. c.
Buff. N. Y. & P.	\$2,165,960	\$1,998,070	I. 167,890	8.4
Buff. Roch. & P.	1,006,491	1,025,768	D. 19,277	1.9
Calif. V. & C.	530,316	8,823,217	I. 1,259,569	18.4
Canadian Pac.	8,823,217	6,566,205	D. 24,773	0.4
Chi. & Alton	6,541,432	1,348,866	I. 85,287	6.3
Chi. & East. Ill.	1,434,153	20,070,120	I. 638,548	3.2
Chi. & N. W.	20,070,120	4,700,412	I. 19,369	4.0
Chi. St. P. & O.	4,933,301	1,061,783	I. 90,290	8.5
Chi. & W. Mich.	1,155,073	1,073,083	I. 178,051	9.0
C. L. & W. L. & C.	2,154,734	1,97,756	I. 243,542	17.4
Cin. W. & Balt.	1,041,298	1,933,981	I. 5,33	0.3
Col. H. V. & Tol.	1,919,114	1,913,981	I. 11,855	1.1
Det. La. & N.	1,011,292	3,299,249	I. 82,983	2.5
E. Ten. Va. & G.	3,382,232	611,294	I. 29,069	4.7
Ev. & T. Haute.	640,303	1,586,376	I. 193,857	12.2
Flint & Pere Mar.	781,233	12,349,815	I. 161,099	13.0
Grand Trunk	13,001,514	8,177,094	D. 200,085	2.3
Ill. C. N. R.	8,177,094	1,339,485	I. 81,743	6.1
Iowa lines	1,42,228	1,941,294	I. 164,05	8.4
Ind. B. & W.	2,105,469	2,465,112	I. 125,592	5.1
Long Island	2,900,704	585,219	I. 1,8151	21.9
Lou. I. V. & St. L.	713,361	11,378,995	I. 68,421	0.6
Louisv. & Nashv.	1,447,416	1,369,189	I. 104,371	12.0
L. N. A. & C.	1,533,600	9,454,646	I. 348,34	39.5
Me. & N. H.	1,533,600	2,900,333	I. 136,175	4.7
Mexican Cen.	3,038,558	404,120	I. 58,462	12.5
Mil. & Northern	522,182	1,640,889	I. 130,726	8.0
Mobile & Ohio	1,509,563	19,864,759	I. 6,955,361	35.0
N. Y. C. & H. R.	26,820,120	37,771	I. 85,536	22.9
N. Y. City & N.	458,307	1,048,045	I. 66,354	5.7
N. Y. Out. & W.	1,108,439	2,227,470	I. 401,826	18.0
Norfolk & West.	2,029,372	3,073,150	I. 148,750	4.7
Ohio & Miss.	3,194,850	377,076	I. 38,86	10.3
Ohio Southern	415,937	3,980,610	I. 431,665	10.8
Oreg. R. & N.	4,412,281	609,484	I. 58,991	9.7
Peoria, Dec. & E.	608,475	3,340,461	I. 58,905	1.8
Rich. & Danville	3,308,456	1,294,129	D. 4,476	0.3
Rich. & D. Div.	1,289,653	3,921,67	I. 48,476	12.5
S. W. N. C. Div.	440,591	636,892	I. 33,277	5.1
South Car. Div.	623,615	542,898	D. 61,881	11.4
St. J. & G. I.	481,017	907,99	I. 54,09	6.0
St. P. M. & Man.	5,501,492	5,974,681	I. 73,589	1.2
Tol. & Ohio Cen.	655,269	9,717,187	I. 858,767	8.9
Wab. St. L. & P.	10,575,94	1,208,738	I. 9,009	0.7
Wisconsin Cent.	1,217,747			

Nine months to Sept. 30:

	1886.	1885.	Inc. or Dec.	P. c.
Can. & Atl.	\$500,616			
Net earnings	1,67,784			
Canadian Pac.	7,093,786	\$5,907,379	I. \$1,126,407	19.0
Net earnings	2,507,058	2,380,883	I. 217,675	9.5
Chi. Bur. & Q.	19,326,863	10,550,140	I. 276,723	1.4
Net earnings	1,135,676	8,449,736	I. 985,940	8.1
Fl. Worth & D.	284,891	342,950	D. 58,064	16.9
Net earnings	113,514	145,046	D. 29,582	2.7
Hous. & Tex. C.	1,932,809	1,538,693	I. 394,116	25.6
Net earnings	306,682	161,049	I. 145,633	89.7
Ill. Rock Island	39,701	39,088	I. 613	20.3
L. R. M. R. & T.	24,180	211,614	I. 31,568	15.0
Louis & Nash.	10,048,400	10,117,890	D. 69,490	0.7
Net earnings	3,866,689	3,867,218	D. 529	
L. N. O. & Tex.	1,092,533	771,245	I. 321,188	41.7
Net earnings	220,610	64,576	I. 156,024	24.5
Ohio & Miss.	2,857,510	2,089,144	I. 138,366	5.1
Net earnings	737,707	937,707	D. 9,000	1.8
Oreg. R. & N.	3,769,381	3,314,404	I. 454,877	13.5
Net earnings	1,10,327	1,393,772	I. 216,535	15.5
Shenandoah Val.	542,333	512,37	I. 20,966	4.0
Net earnings	60,518	18,695	I. 47,823	255.7
South Carolina	774,222	781,252	D. 7,030	0.9
Tol. & Ohio Cen.	572,744			
Net earnings	157,961			
Union Pacific	19,153,909	18,272,033	I. 881,056	4.8
Net earnings	6,145,241	6,453,205	D. 307,964	4.8

Month of September:

	1886.	1885.	Inc. or Dec.	P. c.
Can. & Atl.	\$59,677			
Net earnings	19,394			
Canadian Pac.	932,476	\$5,907,379	I. \$1,126,407	19.0
Net earnings	375,189	358,864	I. 16,325	4.5
Chi. Bur. & Q.	2,724,588	2,640,034	I. 84,554	3.2
Net earnings	1,593,344	1,496,381	I. 96,963	6.4
Fl. Worth & D.	42,259	39,677	I. 2,582	6.5
Net earnings	23,355	13,615	I. 9,740	71.6
Hous. & Tex. C.	394,508	304,382	I. 89,976	29.5
Net earnings	200,918	111,556	I. 89,362	87.9
Ill. Rock Island	39,000	7,317	I. 9,713	13.3
L. R. M. R. & T.	28,300	211,614	I. 2,055	7.9
Louisv. & Nashv.	1,258,191	1,148,213	I. 109,978	9.6
Net earnings	526,753	464,632	I. 62,121	13.3
Lou. N. O. & T.	131,988	90,106	I. 41,882	46.5
Net earnings	34,000	12,814	I. 21,186	165.2
Ohio & Miss.	393,601	344,618	I. 48,943	13.1
Net earnings	147,784	122,040	I. 25,744	20.6
Oreg. R. & N.	5,600,000	216,535	I. 2,574	1.7
Net earnings	303,244	210,634	I. 7,390	2.7
Shenandoah Val.	85,222	76,925	I. 8,297	10.8
Net earnings	25,203	20,095	I. 5,108	25.5
South Carolina	101,899	113,47	D. 11,578	10.2
Tol. & Ohio Cen.	80,446	64,788	I. 15,658	24.1
Net earnings	24,363	8,574	I. 15,789	183.6
Union Pacific	2,517,092	2,460,919	I. 16,873	2.3
Net earnings	911,681	1,100,827	D. 249,746	21.5

Month of October:

South of October.	\$227,300	\$240,600	D.	\$13,300	5.5
Buff. N. Y. & P.	128,865	129,431	I.	566	0.4
Buff. R. & P.	60,902	44,583	I.	16,319	36.3
Calif. V. & C.	1,46,000	915,838	I.	130,162	144.3
Canadian Pacific.	707,953	777,046	I.	20,907	2.7
Chic. & Alton.	107,374	124,441	I.	42,733	32.2
Chic. & Atlantic.	173,996	177,061	D.	1,965	1.1
Chi. & East. Ill.	2,75,000	1,168,888	I.	111,688	11.8
Chi. & N. W.	648,700	699,884	D.	51,184	7.8
Ch. St. P. M. & O.	124,543	118,640	I.	5,903	5.5
Ch. & W. Mich.	250,778	220,266	I.	30,512	13.9
C. N. O. St. L. & C.	10,579	15,911	I.	38,638	25.3
Cin. W. & Balt.	257,190	240,713	I.	10,477	4.2
Col. H. Vy. & Tol.	115,744	130,846	D.	15,102	11.6
Det. Lau. & No.	438,050	400,250	I.	38,671	9.0
E. Ten. Va. & G.	8,838	8,377	I.	6,800	3.5
Gal. & Tex. Int.	185,590	178,730	I.	6,860	3.5
Flint & Pere Mar.	1,517,893	1,656,786	I.	261,807	15.8
Grand Trunk.	1,106,942	1,087,735	I.	24,267	2.3
Illinois Central.	188,828	168,017	I.	20,811	12.2
Iowa lines.	245,426	227,116	I.	18,230	8.0
Ind. Bloom. & W.	237,549	238,595	I.	11,614	5.5
Long Island.	8,838	8,377	I.	6,800	3.5
La. & N. O.	1,389,015	1,257,469	I.	141,546	11.8
Louisv. & Nash.	195,617	174,922	I.	6,695	11.3
L. N. A. & Chic.	187,219	163,201	I.	24,018	14.7
Lou. N. O. & T.	345,790	246,375	I.	99,714	40.3
Mexican Central.	64,450	51,368	I.	10,082	18.7
Mil. & Northern.	212,075	253,956	D.	41,881	10.8
Mobile & Ohio.	3,190,080	2,250,880	I.	99,675	5.5
N. Y. C. & H. R.	46,619	49,518	I.	6,101	15.5
N. Y. Ont. & W.	117,150	114,848	I.	2,302	2.0
Norfolk & West.	370,21	262,394	I.	51,627	20.8
Ont. & Miss.	382,340	374,006	I.	8,334	2.9
Ohio Southern.	54,993	52,130	I.	7,863	15.5
Oreg. R. & N.	643,000	606,22	D.	23,212	3.5
Peoria, Dec. & E.	70,389	67,024	I.	12,365	18.4
Rich. & Danville.	435,144	425,516	I.	9,628	2.2
R. & D. Div.	155,124	152,959	I.	2,165	1.2
Va. Mid. Div.	52,569	46,771	I.	5,798	12.3
West. N. C. & Iv.	87,902	85,477	D.	80,865	8.5
South. Car. Div.	77,421	88,737	D.	20,835	23.4
Gr. & Col. Div.	321,557	1,586,789	I.	4,965	3.8
St. Jo. & Gd. L.	8,525	1,301,789	D.	58,791	3.8
St. L. Min. & St. P.	1,237,000	1,189,000	I.	48,000	4.0
T. J. & Ohio Cen.	144,429	143,607	I.	822	0.6
Wab. & St. L. & P.					
Wisconsin Cent.					

freight tariff and classification, except in so far as to insert certain articles not now contained therein, and to adjust the classification of a number of articles that are now out of line with the existing state of business."

Traffic Notes.

During the month of October 2,628,437 passengers crossed the Brooklyn Bridge, 2,317,392 in the bridge cars and 311,045 on foot.

During the month of October the Western Railway Weighing Association weighed 80,002 car-loads of freight with 73,144 car-loads in September and 81,594 car-loads in October, 1885.

Purchases of real estate on Staten Island have recently been made by parties represented by Mr. A. B. Stickney, President of the Minnesota & Northwestern road, and it is stated that the object is to establish there extensive stock-yards, which will be reached by the Baltimore & Ohio Railroad when its Staten Island line is completed.

There are reports of dissension in the Texas Traffic Association, which seem to be without much foundation at present.

Southwestern Railway Association.

At the conference of the members of the Southwestern Association and representatives of the Kansas roads in St. Louis last week several plans were presented, all involving a settlement of differences by arbitration, and it is probable that one of these plans will be adopted.

RAILROAD LAW.

Ejecting Passenger—Liability of Company.

In the case of *Savage against the Wabash, St. Louis & Pacific Co.*, the Indiana Supreme Court affirms judgment of lower court for plaintiff, holding as follows:

An averment in a complaint against a railroad company for ejecting a passenger, which in effect averred that it was the defendant, acting through its agents and servants, was equivalent to an averment that the injury was inflicted by the defendant, acting through its duly authorized agents and servants. Such a complaint is not bad for failing to aver that the servants of the company were acting within the scope of their duty. Where the complaint was for injuries in ejecting a passenger at a particular time and place, it was sufficiently specific, without setting out the kind of train he took passage on, whether freight or passenger, or what servants put him off, whether brakemen or conductors, or what time of night or day the train left. The facts in this case were that the plaintiff, being in Fort Wayne, started to go to his home in Garrett City by way of Defiance, O. He purchased a ticket at Defiance, and through mistake got on the Wabash train going west. He was told by the conductor of his mistake, and ordered to get off at the first station. The train was not stopped still in order for him to get off, and while standing on the platform and refusing to get off until it stopped, the brakeman pushed him off. He fell, and the injury caused resulted in the amputation of his left arm. There was a sharp conflict in the evidence. The conductor testified that the plaintiff was not injured by being put off the train, for the reason that he was never on the train and never put off. The brakeman corroborated the conductor, but there is evidence tending to support the verdict in all essential respects. While a brakeman has no authority to eject a passenger, yet the company is liable for an injury wantonly inflicted by a brakeman on a passenger traveling on a train on which he is acting as brakeman.

Obligation to Maintain a Railroad in Good Condition.

Some time ago Attorney-General Hunt commenced a *mandamus* proceedings in the Sangamon Circuit Court against the Ohio & Mississippi Railroad Co. in the name of the people of the state of Illinois to compel it to put the track of its Springfield Division, and more especially that portion of it between Flora and Shawneetown, in a safe condition and so operate the road as to afford the people reasonable transportation facilities. Its duties to the people who had contributed largely to the construction of the road were recited in the petition for *mandamus*. Answer was made among other things that the Ohio & Mississippi Co., though operating the road, was not lawfully in its possession and that the road did not pay operating expenses and that it was without means to make the repairs demanded in the petition if it desired to do so; that it knew nothing of any municipal, town or county aid extended in construction, the road having been built by a corporation other than that now operating it, and, finally, that it was willing to place the road in the hands of a receiver. Complainant demurred to this answer as being insufficient, and recently the case was argued on demurrer. Judge Phillips rendered his decision Oct. 12, which sustains the petition. Among other things, the Court said that the claim that the Ohio & Mississippi Co. under its charter had no right to acquire the road from Beardstown to Shawneetown could not be heard from the defendant in this case as an answer to the complaint set up, the petition alleging failure of public duty on behalf of the owner, and the fact that such a claim on behalf of the state against the defendant might be held good, could not be held to support defendant's right to plead its guilt in a matter not charged as a defense in the matter charged. The answer that the said acquired road, while not in safe and convenient condition to be operated with more and faster trains, is safe and convenient to be operated as it is being operated, is not a sufficient answer to the petition charging it with being in a condition inconvenient and unsafe. That defendant has not the means to put the road in the required condition to be operated in the manner required is not a sufficient answer in the absence of a proper showing of the means it has; in other words, disclosing the state of proceeds and their application. What has the offer to surrender the road to do with defendant? Is defendant in a position in its relation to its creditors to ask the Court to take charge of the road and relieve it from the duty of operating it, or would the Court in this proceeding, on the application of the defendant alone, unprompted by the creditors, appoint a receiver? Therefore, such an offer can be no proper answer in the case.

Concluding, the Court said: "I am disposed to hold first, that a railroad company organized under the laws of the state of Illinois and granted extraordinary powers with reference to condemning right of way and taking the land of private individuals for the purpose of constructing the line of railroad, and also granted extraordinary powers with reference to the protection of law thrown around it, owes a duty to the public in respect to the carriage of freight and passengers, and as such carrier owing that duty the road is in the nature of a public highway, and may be controlled by the Court; and, second, if the allegations of this petition are true, which are not denied by this answer, as I understand the effect of the answer, it is no defense to claim that the defendant has been guilty of any unlawful act, nor is it a defense to insist that in the exercise of its own judgment and discretion the defendant may apply the proceeds and receipts from the carriage of freight and passengers on one portion of its road to a purpose other and different than that of keeping in repair the whole line of road under its control. Its highest duty, with reference to its line of road, is not alone to the stockholders or persons holding its bonds, but the duty this

company owes to the public is a duty prior to any it owes to any private creditor or stockholder. I am disposed, further, to hold that the proper remedy in such a case is by *mandamus* and, while holding the answer insufficient as setting up a ground of defense, I am inclined to think the petition as a petition is sufficient, and while that branch of petition which avers private subscriptions and municipal subscriptions along the line amounting to \$2,000,000 is not a matter of importance in this petition, and gives no right that does not exist outside of and beyond that, still it is not an averment as would make the petition, and I am disposed to hold that the petition in this case is sufficient, and the demurrer is sustained."

The case will be appealed.

OLD AND NEW ROADS.

Annapolis & Bay Ridge.—This road has been sold to Mr. Robert Garrett, President of the Baltimore & Ohio Co., for \$50,000. This road is 5 miles in length, extending from Annapolis, Md., to Bay Ridge, and the sale includes the property at Bay Ridge, where the company is building up a summer resort.

Atchison, Topeka & Santa Fe.—New extensions of this company's branch lines in Kansas are reported as follows: On the Larned Branch, from Larned west to Burdett, 23 miles; on the Little River Branch, from Little River northwest to Hollywood, 25 miles; on the Mulvane Extension, from Mulvane west to Norwich, 24 miles; on the Independence Branch, from Independence southwest 41 miles; on the Chanute Branch, from Chanute west to Fredonia, 25 miles; on the Walnut Valley Branch, from Douglass south to Winfield, 18 miles. A portion of this track has been reported before, the distances above giving the total amount of track laid up to date of the latest report.

Baltimore & Ohio.—This company has contracted for the building of a steam ferry-boat to transfer passenger trains across Baltimore Harbor from Locust Point to Canton. The new boat is to be ready in time for the opening of the company's line through to New York early next year. The company is making active preparations for the opening of that line, and is putting the new Philadelphia Division in first-class condition. The transfer ferry will be used for the New York business until arrangements are completed for the new entrance of that division into Baltimore.

It is stated that negotiations are in progress for the extension of the Baltimore & Ohio express line over the lines controlled and operated by the Cincinnati, New Orleans & Texas Pacific Co., and the agreement will shortly take effect.

Belvidere Delaware.—Notice is given that the \$750,000 third mortgage bonds, which will mature in February next, will be extended for 30 years, with interest at the rate of 4 per cent. The present holders will be given the option of extending their bonds between Dec. 1 and Jan. 1 next. All bonds not extended will be paid at maturity.

Boston & Lowell.—At the adjourned meeting in Boston, Nov. 6, the tellers reported that 26,138 votes had been cast in favor of approving the lease of the Central Massachusetts road, and only 115 against it. The lease was therefore declared approved and the meeting adjourned.

Buffalo, New York & Philadelphia.—The foreclosure suit came up before the Supreme Court in Buffalo, N. Y., Nov. 4. At the opening of the proceedings counsel for Mr. Cohen, of New York, moved that the case be dismissed, on the ground that the Court had no jurisdiction in the matter. This motion was set aside and the necessary evidence to prove the mortgage and the default was then introduced.

Buffalo, Rochester & Pittsburgh.—The New York Supreme Court has granted the application of William H. Armstrong for the appointment of a receiver for the Rochester & Pittsburgh Co. The road was sold over a year ago and was transferred to the Buffalo, Rochester & Pittsburgh Co. Stockholders who were opposed to the reorganization had a receiver appointed in Pennsylvania.

Canadian Pacific.—The statement for September and the nine months to Sept. 30 is as follows:

	September, 1886.	1885.	Nine months, 1886.	1885.
Gross earnings.....	\$955,963	\$823,487	\$7,036,786	\$5,907,379
Operating expenses.....	580,774	460,613	4,520,758	3,617,906

Net earnings.....\$375,189 \$356,864 \$2,507,058 \$2,289,383

For the nine months the gross earnings increased \$1,129,407, or 19.1 per cent., and the expenses \$911,732, or 25.2 per cent., the result being a gain of \$217,675, or 9.5 per cent., in the net earnings.

Central of Georgia.—As noted from time to time, rumors have been current for some time past of the extensive purchases of the stock of this road, which were generally reported to be in the interest of the Louisville & Nashville Co., although it has also been reported that the Richmond & Danville Co., was trying to secure control. President Raoul is reported as saying in a recent interview that the purchases of stock had been very much exaggerated by the reports and that nothing approaching a majority had been transferred on the books of the company. So far as he knew the controlling interest was still with the local stockholders.

Central Massachusetts.—At the adjourned special meeting in Boston, Nov. 6, the tellers reported that more than the majority of the stock had been voted in favor of the lease of the road to the Boston & Lowell Co., and that no votes had been cast against it. The lease was thereupon declared to be approved. The stockholders then voted to authorize the issue of \$2,000,000 in bonds to complete the main line, and \$1,000,000 to complete the branch to Holyoke, in accordance with the provision of the lease.

Central Pacific.—On the extension of the Oregon Division track is now laid to Sisson, Cal., 40 miles northward from the old terminus at Delta. No more track will be laid this year, but work on the grading will be continued in the tunnels and at other points as far as the weather will permit.

Charleston, Cincinnati & Chicago.—Grading is reported finished on this road from Rutherfordton, N. C., southward to Blacks, S. C., and the bridge work is being pushed as fast as possible. Tracklaying will be begun as soon as the steel rails are received.

Chicago, Burlington & Quincy.—The statement for September and the nine months to Sept. 30 is as follows:

	September, 1886.	1885.	Nine months, 1886.	1885.
Passengers.....	\$619,017	\$612,307	\$4,139,896	\$3,857,673
Freight.....	1,956,870	1,881,417	13,928,604	13,982,443
Mail, etc.....	148,700	146,320	1,258,363	1,210,024

Total.....\$2,724,587 \$2,640,034 \$19,326,863 \$19,050,140

Expenses.....1,131,244 1,143,203 10,191,187 10,600,404

Net.....\$1,593,343 \$1,496,831 \$9,135,676 \$8,449,736

For the nine months the gross earnings increased \$276,723, or 1.5 per cent., and the expenses decreased \$409,217, or 3.9 per cent., the result being a gain in net earnings of \$685,940,

or 8.1 per cent. The increase in gross earnings was entirely in passenger and miscellaneous receipts, freight earnings showing a small decrease.

A company has been organized to build a branch from this company's line at Oxford, Neb., southward into Kansas, and also to build a branch through the Beaver and Sappa valleys in Nebraska.

Chicago, Kansas & Western.—A Chicago dispatch of Nov. 10 says: "Articles of incorporation were filed yesterday with the Secretary of State, at Springfield, by the Chicago, Kansas & Western Railroad Co., of Illinois, with its principal office at Chicago, and a capital stock of \$10,000,000. It is proposed to construct this road as follows: From a point in Hancock County, Ill., on the Mississippi River, opposite Fort Madison, Iowa, northeast to Chicago; also a branch from a point in Illinois, opposite Keokuk, Ia., to a point on the first named line not yet determined; also from a point on the main line in Knox County, Ill., to the eastern line of the state; also from a point on the second line named to Rock Island, Ill., and to a point on the Mississippi opposite Muscatine, Iowa; also from a point on the second line to a point on the Mississippi in Henderson County, Ill."

The incorporators are William B. Strong, Boston, Mass.; George R. Peck, Topeka, Kan.; Norman Williams, Charles S. Holt and Arthur Dana Wheeler, of Chicago. Mr. Strong is the President, and Mr. Peck the General Solicitor of the Santa Fe, and the other incorporators are also interested in that company. There can, therefore, be no doubt that this is the new road which the Atchison has been threatening to build between Chicago and Kansas City, and that it has definitely decided to at once build the new road."

Chicago, Milwaukee & St. Paul.—On the branch from Astor, Ia., on the Council Bluffs line, to Sioux City the grading is now nearly completed. Track has been laid from Sioux City, Ia., southeast, to the Monona County line, a distance of about 30 miles.

On the Kansas City Extension track is now laid for 20 miles southwest from Ottumwa, and the work is progressing steadily.

Chicago, Rock Island & Pacific.—It is announced that this company has agreed to lease the Des Moines & Fort Dodge road at a rental of 30 per cent. of the gross earnings and the guarantee of the interest on the bonds. The lease is to take effect Jan. 1 next.

Cincinnati & Westwood.—The Cincinnati *Times Star* says of this suburban line, which is 56 miles long: "The Cincinnati & Westwood narrow gauge is to be abandoned. The rails will be taken up and sold, together with all other property of the road, and there will be nothing left to remind of its existence but some tumble-down trestles. It is very unfortunate that such is the case. A great many have depended upon it for getting to and from the city and a number have purchased property along the route, solely because of the facilities afforded of more comfortable and rapid transit than that given by the bus line. The result of the abandonment will be the practical isolation of a beautiful section of country and the forcing of persons seeking suburban homes into other directions. However, the property has been operated at a loss for years, and the owners have concluded to sink no more money in it."

Columbus & Western.—This company has been advertising for bids, which will be received until Nov. 15, for the masonry work, three piers and two abutments, for the bridge over the Coosa River near Childersburg, Ala., and also for building two tunnels near Leeds, Ala., one to be 1,150 ft. long and the other 2,400 ft. long. This work is on the extension from Goodwater to Birmingham.

Cumberland, Moorefield & Southwestern Virginia.—This company has filed articles of incorporation in West Virginia to build a railroad from Moorefield, in Hardy County, through Hampshire and Mineral counties, to Cumberland, Md. The principal office is at Moorefield. Surveys are now being made for the line.

Delaware & Hudson Canal Co.—This company's statement for its leased lines in New York for the quarter ending Sept. 30 is as follows:

	Gross earnings.	Net earnings.	Surplus.
Albany & Susquehanna.....	\$806,242	\$378,259	\$131,083
N. Y. & Canada.....	237,289	118,176	39,813
Rens. & Saratoga.....	774,004	414,872	147,619
Total.....	\$1,817,535	\$901,307	\$318,515
Total, 1885.....	1,550,783	797,373	177,480

Increase.....\$266,752 \$103,934 \$41,035

Per cent.....17.2 13.0 14.8

The surplus above is the amount remaining after deducting all interest and rental charges from the net earnings.

Denver & Rio Grande.—The Bondholders' Committee gives notice that the United States Trust Co. will deliver on Nov. 15 against their certificates for first consols 7s and general mortgage bonds, the new 4 per cent. consols and orders upon the new company for the preferred stock, receivable therefor under the plan of reorganization.

Des Moines & Fort Dodge.—The following notice has been issued: "This company having agreed upon a lease to the Chicago, Rock Island & Pacific Railway Co. at a rental of 30 per cent. of the gross earnings, and a guarantee to be stamped upon the bonds by the lessee, agreeing to pay interest upon the first and extension bonds at the rate of 4 per cent., and upon the income bonds at 2½ per cent. per annum, also to advance the money to pay the deferred interest scrip now outstanding; therefore, in order to consummate the lease before January, 1887, when the first interest will be paid thereunder, and in view of the fact that this company can otherwise only pay 3 per cent. on its first mortgage and extension bonds and nothing upon its income bonds, it is necessary to have forthwith the assent of the holders of all the bonds."

The holders of two-thirds of the bonds have already assented.

The holders of the remainder are requested to call at the office of the President, Charles E. Whitehead, Esq., 61 Wall street, New York, to give their assent to this plan as soon as possible."

The road extends from Des Moines, Ia., to Fort Dodge, 88 miles, with an extension from Tara to Ruthven, 55 miles. The funded debt includes \$1,200,000 firsts, \$672,000 extension bonds, and \$1,200,000 incomes. The amount of interest guaranteed by the lessee is thus \$104,880 yearly. The gross earnings last year were \$382,420; the net earnings, \$120,420.

Duluth, South Shore & Atlantic.—Several engineering parties are already locating the line of this road. The company having purchased the Detroit, Mackinac & Marquette and secured a controlling interest in the Marquette, Houghton & Ontonagon road has two sections of line to build to complete its projected line. The first section is from Sault Ste. Marie, Mich., to the Marquette, Houghton & Ontonagon, a distance of about 40 miles. The other section is from Sturgeon, Mich., on the Marquette, Houghton & Ontonagon, to Duluth, a distance of about 190 miles. It is said that the line will not run through Ashland, but will pass

some 12 or 15 miles south of that place and will reach it by a branch. The contractors, Brown, Howard & Co., have agreed to have the road in operation by Nov. 30 of next year, which will require the employment of a very large force.

Eastern.—At a meeting of the directors in Boston, Nov. 6, it was voted to issue \$3,150,000 in preferred stock, the object of this issue being to reduce the debt of the company below \$10,000,000. Under the agreement in bankruptcy by which the present certificates of indebtedness were issued, dividends upon the common stock can be resumed whenever the debt falls below \$10,000,000, and not until that time. As long as the debt is over \$10,000,000, any surplus earnings must be used in the purchase of certificates. A circular has been issued to the bondholders which states that the company will issue the new preferred stock, which is entitled to a dividend of 6 per cent., in exchange for an equal amount of certificates of indebtedness, provided that certificates to the amount named are tendered in exchange and deposited with the company's agents in Boston and London by noon of Nov. 23 next. Should a sufficient amount be deposited, the preferred stock will be delivered as soon as possible after that date. Should bonds in excess of the amount named be tendered, the exchange will be made *pro rata*. If a sufficient amount of bonds is not tendered to take up all of the preferred stock, the certificates will be returned and the bonds will not be issued. The original amount of the bonds or certificates issued was \$13,547,000. There have been canceled to date \$440,500, leaving \$13,106,500 now outstanding.

Easton & Bangor.—This company has filed articles of incorporation in Pennsylvania. The line will be about 20 miles in length, running from a point in or near Pen Argyl to a point in or near Wind Gap, and thence through Ashland or Stockertown along the Bushkill Valley to a point in or near Easton, and thence to a point of connection with the Lehigh Valley Railroad in Northampton County.

Eufaula & St. Andrews Bay.—This company has been incorporated in Alabama to build a railroad from Eufaula, southward, to St. Andrews Bay, on the Gulf. The headquarters are in Eufaula, and the capital stock is to be \$2,000,000.

Fairchild & Mississippi River.—The grading of this road is about completed from Fairchild, Wis., to Osseo, a distance of 15 miles. The track will not be laid this fall, owing to the delay in obtaining ties and rails.

Fayetteville & Little Rock.—Grading is now in progress on the section of this road from Fayetteville, Ark., southward to St. Paul, in Madison County, and a considerable amount of work has been done. The line is intended to run from Fayetteville to the city of Little Rock.

Flint & Pere Marquette.—It is reported that this company will build a branch from Wayne Junction, Mich., to Detroit, a distance of about 18 miles. At present the company runs trains into Detroit over the Michigan Central tracks.

Florida Railway & Navigation Co.—A special meeting of the stockholders of this company is called, to be held in Fernandina, Fla., Dec. 3, to consider measures for the completion of the company's Southern Division from Withlacoochee, Fla., to Tampa Bay, and to authorize the sale or mortgage of the line for the purpose of raising money for construction.

Fort Worth & Denver City.—The statement for September and the eleven months of the fiscal year from Nov. 1 to Sept. 30 is as follows:

	September.	1885.	1886.	1887.
Earnings.....	\$42,259	\$39,677	\$361,770	\$404,916
Expenses.....	18,904	26,062	123,444	229,556
Net earnings.....	\$23,355	\$13,615	\$138,326	\$175,360

For the eleven months the gross earnings decreased \$43,146, or 10.6 per cent., and the expenses \$6,112, or 2.7 per cent.; the result being a decrease of \$37,034, or 21.1 per cent., in the net earnings.

Grand Rapids & Indiana.—Tracklaying is completed on the branch from Grand Rapids to Muskegon, a distance of 37 miles, and the road will shortly be opened for business. It is expected to add considerably to the lumber traffic of the road.

Grand Trunk.—The statement for September and the three months from July 1 to Sept. 30 is as follows:

	September.	1885.	1886.	1887.
Earnings.....	\$235,544	\$285,142	\$294,391	\$292,335
Expenses.....	216,068	207,621	614,785	605,502
Net earnings.....	\$119,476	\$77,521	\$279,606	\$186,833

For the three months the gross earnings increased \$153,456, or 19.2 per cent., and the expenses \$37,283, or 6.2 per cent.; the result being a gain in net earnings of \$116,173, or 62.1 per cent.

The report for the controlled lines west of Detroit for the three months as follows:

	—Chl. & G. T.—	—D. G. H. & M.—
	1886.	1885.
Earnings.....	\$161,569	\$133,633
Expenses.....	122,186	115,050
Net earnings.....	\$39,383	\$18,583

The Chicago & Grand Trunk shows an increase of \$27,936, or 20.9 per cent., in gross earnings, and \$20,955, or 114.1 per cent., in net earnings. On the Detroit, Grand Haven & Milwaukee there was an increase of \$8,359, or 9.6 per cent., in gross earnings, and of \$6,201, or 27.7 per cent., in net earnings.

Green Pond, Walterboro & Branchville.—Grading is now nearly completed on this line from Branchville, S. C., on the South Carolina Railroad, southward to Walterboro, a distance of 29 miles. Tracklaying has been begun and 5 miles of rails are reported down.

Houston, East & West Texas.—The Commercial and Financial Chronicle says: "The Receiver has failed to provide the necessary funds for the payment of the coupon due Nov. 1 on the first mortgage bonds. No advice has been received here as to the cause of the default; it has been suggested that all available funds have been required to pay receiver's certificates, and friends of the property think that the coupon will shortly be paid. The amount required is \$47,000."

Indiana, Bloomington & Western.—A statement has just been issued by the Committee of Reorganization of this company giving reason by which they consider a foreclosure and reorganization has become necessary. The committee consists of F. P. Olcott, Francis O. French, Dumont Clarke, J. R. Maxwell and J. J. Farrell. The members were selected by holders of large amounts of bonds and stock of the company, and were approved by the board of directors. They submit two plans—the first for an independent reorganization and the second in case of the consummation of the proposed consolidation with the Ohio companies. The first plan provides for the issue of \$10,000,000 common stock, \$3,325,000 preferred stock, \$8,000,000

first mortgage bonds and \$2,000,000 second mortgage bonds, both at 5 per cent. interest. The old first and second mortgage bonds of the company will receive par in the respective issues of the new company, and the accrued interest will be paid at the rate of 5 per cent. per annum in cash. The income bonds will have 70 per cent. of their face value in new preferred stock, and stockholders will receive share for share in the stock of the new company on the payment of a cash assessment of 7 per cent., payable in two installments.

If a consolidation with the Cincinnati, Sandusky & Cleveland and the Columbus, Springfield & Cincinnati is finally consummated, a first consolidated mortgage of \$12,500,000 will be issued, \$8,000,000 of which will be applied in lieu of the first mortgage bonds provided for in the first plan, \$3,690,000 to take up the present issues of bonds and preferred stock of the Ohio companies, and \$810,000 for the compromise of claims against the present company; \$2,000,000 consolidated mortgage bonds in place of the second mortgage provided for in the first plan, \$8,000,000 preferred stock to take up the common stock of the Ohio companies and retire the present income bonds and \$10,000,000 common stock, as provided for in the first plan. Securities are to be deposited with the Central Trust Co. in New York. The committee are assured that the counsel for the trustees' creditors and the company are prepared to agree upon the sale at once, upon the assent of the requisite amount of bonds.

Lehigh Valley.—The old report that this company was interested in the Pittsburgh, Seaboard & Western project and would build a line under the charter of that company from Ashland, Pa., to Pittsburgh, has been revived. This report has been frequently denied and does not seem to be any more probable now than heretofore. It is also reported that the company is making arrangements to build a line of its own from a point near Metuchen, N. J., to Jersey City, using the bed of the Morris Canal, which it leases, as an entrance into that city and the canal basin as a terminal station.

Little Rock & Fort Smith.—The land sales for September were 1,835 acres for \$5,892. For the nine months to Sept. 30 the total sales were 21,840 acres for \$70,093, against 19,301 acres for \$69,769 in the corresponding period last year. The average price was \$3.21 per acre, against \$3.61 last year.

Louisville & Nashville.—The statement for September and the three months of the fiscal year from July 1 to Sept. 30 is as follows:

	September.	1885.	1886.	1887.
Earnings.....	\$1,258,191	\$1,148,213	\$3,718,532	\$3,284,341
Expenses.....	731,618	683,561	2,140,166	2,057,461
Net earnings.....	\$526,573	\$464,652	\$1,578,366	\$1,226,880

Expenditures for construction and improvements this year were \$44,474 for September and \$104,903 for the three months, leaving net balances of \$482,099 for the month and \$1,473,463 for the quarter.

For the three months the gross earnings increased \$434,191, or 13.2 per cent., and the expenses \$82,705, or 4.0 per cent., the result being a gain of \$351,486, or 28.6 per cent., in the net earnings.

Marietta & North Georgia.—The suit of James T. Harrison to restrain the Governor and the Treasurer of the State of Georgia from turning over to this company the bonds held by the State, came up before the Superior Court in Atlanta last week, when the Court refused to make the temporary injunction permanent, holding that it had no jurisdiction in the case.

Mason City & Fort Dodge.—The contractors, Messrs. Henry & Balch, of Minneapolis, Minn., completed the work of laying rails on this road Oct. 30, thereby securing the local subsidies which were voted on condition that the line should be in operation by Nov. 1. The first passenger train was run over the road Oct. 31. It extends from Mason City, Ia., through Eagle Grove and Lehigh, to Fort Dodge, a distance of about 70 miles. It is intended chiefly as a coal road, passing through extensive coal-fields at Lehigh and other points.

Michigan, Indiana & St. Louis.—At the annual meeting of this company in Elkhart, Ind., Nov. 5, the stockholders voted to approve a contract for the construction of the road from Battle Creek, Mich., to Danville, Ill. The contractors are Chicago parties, who agree to begin work early in the spring and who take their pay in the securities to be issued by the company.

Michigan & Ohio.—The sale of this road under foreclosure is noted elsewhere. It will be remembered that by the plan of reorganization submitted to the bondholders some time ago the new company to be organized by the purchasers was to issue preferred stock in place of the present bonds, and was to place a new mortgage on the road for the purpose of building an extension northward into the lumber regions of Michigan. It is now understood that the negotiations have been resumed for the purchase of the Chicago & West Michigan road and that, in any event, the managers have decided not to build the projected line, provided they can secure control of some line already in operation.

Minneapolis & Pacific.—It is stated that the grading of this road is now substantially finished from Minneapolis, Minn., to Lidgerwood, in Ramsey County, Dak., a distance of 218 miles. In all 150 miles of track have been laid, and tracklaying is now in progress from three different points.

Minneapolis, Sault Ste. Marie & Atlantic.—It is stated that the work of construction on this road will be pushed as fast as possible hereafter, the object being to complete the road through to the Sault Ste. Marie, if possible, in advance of the Duluth, South Shore & Atlantic road.

The track is now laid to Bradley, Wis., on the T. Mahawk River, in Lincoln County, 123 miles from the western terminus at Turtle Lake. The grading is completed to the crossing of the Milwaukee, Lake Shore & Western, at Rhinelander, 18 miles further, and tracklaying is now in progress.

Mississippi Railroad Commission.—Mr. Frank S. Bond, as Receiver of the Vicksburg & Meridian Railroad, has filed a petition in the United States Court asking that the passenger and freight tariff as fixed for that road by the Railroad Commission be set aside and that the road be allowed to return to its former tariffs. The petition claims that the rates fixed for the road by the Commission are unreasonably low and unfair, and that the road is not able to earn a sufficient amount under that tariff to pay its liabilities. An answer has been filed by the Commission, stating that the rates which it prescribed are reasonable, and that it has due authority in the case from the Legislature of the state.

Missouri Central.—It is reported that a contract for building this line has been let to parties who agree to take the first securities and build and equip the road. In accordance with this contract a first mortgage for \$11,000,000 on the projected line has been executed and recorded. The line is to run from St. Louis to Kansas City, on a line between the Missouri Pacific and the Western Division of the Wash-

Missouri Pacific.—The grading is now well advanced on the branch from Paola, Mo., to Kansas City, and track is reported laid from Paola northward 15 miles.

The new Council Grove, Osage City & Ottawa Branch is now completed to Admire, Kan., 18 miles beyond the late terminus at Osage City and 48 miles from the junction with the main line.

The Dallas & Greenville Branch of the Missouri, Kansas & Texas Division has been completed from Greenville, Tex., southwest to Rockwall, 31 miles, and regular trains have been put on this section. Tracklaying has been suspended for the present, as there is a good deal of bridging and trestle-work to be done through the bottoms of the East Fork of the Trinity.

Newport News & Mississippi Valley Co.—General Traffic Manager John Muir announces that arrangements have been made for a new trans-Atlantic steamship line between Newport News, Va., and Liverpool. The first steamer will sail about Dec. 10, and the departures will be semi-monthly thereafter.

New York City & Northern.—The statement to the New York Commission for the quarter ending Sept. 30 is as follows:

	1886.	1885.	Inc. or Dec.	P. c.
Earnings.....	\$152,669	\$130,201	\$22,468	17.2
Expenses.....	115,378	95,143	20,235	21.3
Net earnings.....	\$37,291	\$35,058	\$2,233	6.1
Fixed charges.....	63,897	79,932	16,035	19.5
Deficit.....	\$26,606	\$44,874	\$18,268	39.0

The fixed charges include interest and rentals accruing, whether actually paid or not.

New York & Greenwood Lake.—This road, which has been for some time controlled by the New York, Lake Erie & Western Co., will be from Nov. 1 operated direct by that company. The road extends from the junction with the Erie, just west of the Bergen tunnel, to Greenwood Lake, a distance of 41 miles, and has a branch 4 miles in length to Orange, N. J., and 2 miles to Ringwood. It has never been a very prosperous line, having just about earned its running expenses for several years past.

Northern Pacific.—At a recent meeting in New York the board of directors authorized the immediate construction of new branches in Montana as follows: From Helena to Marysville, 12½ miles; from Drummond to Phillipsburg, 26 miles; from Missoula to Cornwallis, 50 miles. These are three of the branch lines recommended by General Manager Oakes in his last annual report. Surveys for all of them have been made and the location completed.

At latest accounts the heading at the east end of the big tunnel on the Cascade Division was in 1,100 ft. and the west end 850 ft. The headings are progressing at the rate of about 15 ft. a day.

The branch from Rathdrum to Coeur d'Alene, Idaho, a distance of 13 miles, is completed and opened for business. Grading has been in progress on another branch, from Wardner Junction up the South Fork, which will reach another section of the Coeur d'Alene mining region.

On the new Duluth & Maritoba Branch grading is completed for 30 miles northward from the junction with the main line at Hawley, Minn., and track is reported laid for 20 miles.

Ogdensburg & Lake Champlain.—The statement to the New York Commission for the quarter ending Sept. 30 is as follows:

	1886.	1885.	Increase.	P. c.
Earnings.....	\$203,571	\$159,701	\$43,870	27.4
Expenses.....	111,012	78,365	32,647	41.7
Net earnings.....	\$92,559	\$81,336	\$11,223	13.9
Other receipts.....	6,180	4,137	2,043	49.8
Total.....	\$98,739	\$85,473	\$13,266	15.7
Charges.....	62,612	50,834	11,778	23.2
Surplus.....	\$36,127	\$34,639	\$1,488	4.3

Charges include interest, taxes and rentals paid. The increase in expenses was largely due to renewals and improvements of road.

Ohio & Mississippi.—The statement for September and the nine months to Sept. 30 is as follows:

	September.	1885.	1886.	1887.
Earnings.....	\$393,261	\$344,618	\$2,837,510	\$2,699,144
Expenses.....	245,477	221,978	2,011,493	1,971,438
Net earnings.....	\$147,784	\$122,640	\$826,017	\$727,706
Per cent. of exps.....	02.4	04.4	70.0	73.0

For the nine months the gross earnings increased \$138,366, or 5.1 per cent., and the expenses \$40,055, or 2.0 per cent.; the result being a gain of \$98,311, or 13.5 per cent., in the net earnings.

Ohio River.—Track on this road is now laid to a point 44 miles northward from Point Pleasant, W. Va., leaving about 35 miles to be laid to reach Parkersburg. Tracklaying is also in progress from Parkersburg southward.

Orange Belt.—This road was completed to Oakland, Fla., on the south shore of Lake Apopka, on Oct. 30. A mixed train is now running over the road, but about Nov. 13 a regular passenger and freight schedule will be adopted. The road extends from Monroe, on the Jacksonville, Tampa & Key West road, to Oakland, 40 miles. The stations on the line are Sylvan Lake, Paola, Island Lake, Glen Ethel, Longwood Junction, Longwood, Altamonte, Forest City, Lakeville, Miller, Crown Point and Oakland.

Orangeburg & Lewisdale.—This company has been organized to build a railroad from Orangeburg, S. C., on the South Carolina Railroad, to Lewisdale, a distance of about 20 miles. Surveys for the road are now in progress.

Oregon Improvement Co.—The statement for September and the ten months of the fiscal year from Dec. 1 to Sept. 30 is as follows:

	September.	1885.	1886.	1887.
Earnings.....	\$286,508	\$244,496	\$2,355,832	\$2,337,291
Expenses.....	104,395	189,569	1,767,118	1,866,791
Net earnings.....	\$182,113	\$54,927	\$588,714	\$470,500

For the ten months the gross earnings increased \$18,541, or 0.8 per cent., and the expenses decreased \$99,593, or 5.3 per cent.; the result being a gain of \$118,134, or 25.1 per cent., in net earnings.

Oregon Pacific.—Work on the Montana Division of this road from Corvallis, Ore., has been discontinued for the winter, an early fall of snow having driven the graders away.

Oregon Railway & Navigation Co.—On the extension of the Centerville Branch track is now laid to Weston, Ore., 9 miles beyond the late terminus at Centerville and 26 miles from Pendleton. About 5 miles of track remain to be laid between Weston and Blue Mountain, this section waiting the completion of a long and high trestle over Dry Creek. When

freight tariff and classification, except in so far as to insert certain articles not now contained therein, and to adjust the classification of a number of articles that are now out of line with the existing state of business."

Traffic Notes.

During the month of October 2,628,437 passengers crossed the Brooklyn Bridge, 2,317,302 in the bridge cars and 311,045 on foot.

During the month of October the Western Railway Weighing Association weighed 80,002 car-loads of freight with 73,144 car-loads in September and 81,594 car-loads in October, 1885.

Purchases of real estate on Staten Island have recently been made by parties represented by Mr. A. B. Stickney, President of the Minnesota & Northwestern road, and it is stated that the object is to establish there extensive stock-yards, which will be reached by the Baltimore & Ohio Railroad when its Staten Island line is completed.

There are reports of dissension in the Texas Traffic Association, which seem to be without much foundation at present.

Southwestern Railway Association.

At the conference of the members of the Southwestern Association and representatives of the Kansas roads in St. Louis last week several plans were presented, all involving a settlement of differences by arbitration, and it is probable that one of these plans will be adopted.

RAILROAD LAW.

Ejecting Passenger—Liability of Company.

In the case of *Savage* against the Wabash, St. Louis & Pacific Co., the Indiana Supreme Court affirms judgment of lower court for plaintiff, holding as follows:

An averment in a complaint against a railroad company for ejecting a passenger, which in effect averred that it was the defendant, acting through its agents and servants, was equivalent to an averment that the injury was inflicted by the defendant, acting through its duly authorized agents and servants. Such a complaint is not bad for failing to aver that the servants of the company were acting within the scope of their duty. Where the complaint was for injuries in ejecting a passenger at a particular time and place, it was sufficiently specific, without setting out the kind of train he took passage on, whether freight or passenger, or what servants put him off, whether brakemen or conductors, or what time of night or day the train left. The facts in this case were that the plaintiff, being in Fort Wayne, started to go to his home in Garrett City by way of Defiance, O. He purchased a ticket at Defiance, and through mistake got on the Wabash train going west. He was told by the conductor of his mistake, and ordered to get off at the first station. The train was not stopped still in order for him to get off, and while standing on the platform and refusing to get off until it stopped, the brakeman pushed him off. He fell, and the injury caused resulted in the amputation of his left arm. There was a sharp conflict in the evidence. The conductor testified that the plaintiff was not injured by being put off the train, for the reason that he was never on the train and never put off. The brakeman corroborated the conductor, but there is evidence tending to support the verdict in all essential respects. While a brakeman has no authority to eject a passenger, yet the company is liable for an injury wantonly inflicted by a brakeman on a passenger traveling on a train on which he is acting as brakeman.

Obligation to Maintain a Railroad in Good Condition.

Some time ago Attorney-General Hunt commenced a *mandamus* proceedings in the Sangamon Circuit Court against the Ohio & Mississippi Railroad Co. in the name of the people of the state of Illinois to compel it to put the track of its Springfield Division, and more especially that portion of it between Flora and Shawneetown, in a safe condition and so operate the road as to afford the people reasonable transportation facilities. Its duties to the people who had contributed largely to the construction of the road were recited in the petition for *mandamus*. Answer was made among other things that the Ohio & Mississippi Co., though operating the road, was not lawfully in its possession and that the road did not pay operating expenses and that it was without means to make the repairs demanded in the petition if it desired to do so; that it knew nothing of any municipal, town or county aid extended in construction, the road having been built by a corporation other than that now operating it, and, finally, that it was willing to place the road in the hands of a receiver. Complainant demurred to this answer as being insufficient, and recently the case was argued on demurrer. Judge Phillips rendered his decision Oct. 12, which sustains the petition. Among other things, the Court said that the claim that the Ohio & Mississippi Co. under its charter had no right to acquire the road from Beardstown to Shawneetown could not be heard from the defendant in this case as an answer to the complaint set up, the petition alleging failure of public duty on behalf of the owner, and the fact that such a claim on behalf of the state against the defendant might be held good, could not be held to support defendant's right to plead its guilt in a matter not charged as a defence in the matter charged. The answer that the said acquired road, while not in safe and convenient condition to be operated with more and faster trains, is safe and convenient to be operated as it is being operated, is not a sufficient answer to the petition charging it with being in a condition inconvenient and unsafe. That defendant has not the means to put the road in the required condition to be operated in the manner required is not a sufficient answer in the absence of a proper showing of the means it has; in other words, disclosing the state of proceeds and their application. What has the offer to surrender the road to do with defendant? Is defendant in a position in its relation to its creditors to ask the Court to take charge of the road and relieve it from the duty of operating it, or would the Court in this proceeding, on the application of the defendant alone, unprompted by the creditors, appoint a receiver? Therefore, such an offer can be no proper answer in the case.

Concluding, the Court said: "I am disposed to hold first, that a railroad company organized under the laws of the state of Illinois and granted extraordinary powers with reference to condemning right of way and taking the land of private individuals for the purpose of constructing the line of railroad, and also granted extraordinary powers with reference to the protections of law thrown around it, owes a duty to the public in respect to the carriage of freight and passengers, and as such carrier owing that duty the road is in the nature of a public highway, and may be controlled by the Court; and, second, if the allegations of this petition are true, which are not denied by this answer, as I understand the effect of the answer, it is no defense to claim that the defendant has been guilty of any unlawful act, nor is it a defense to insist that in the exercise of its own judgment and discretion the defendant may apply the proceeds and receipts from the carriage of freight and passengers on one portion of its road to a purpose other and different than that of keeping in repair the whole line of road under its control. Its highest duty, with reference to its line of road, is not alone to the stockholders or persons holding its bonds, but the duty this

company owes to the public is a duty prior to any it owes to any private creditor or stockholder. I am disposed, further, to hold that the proper remedy in such a case is by *mandamus* and, while holding the answer insufficient as setting up a ground of defence, I am inclined to think the petition as a petition is sufficient, and while that branch of petition which avers private subscriptions and municipal subscriptions along the line amounting to \$2,000,000 is not a matter of importance in this petition, and gives no right that does not exist outside of and beyond that, still it is not an averment as would make the petition, and I am disposed to hold that the petition in this case is sufficient, and the demurrer is sustained."

The case will be appealed.

OLD AND NEW ROADS.

Annapolis & Bay Ridge.—This road has been sold to Mr. Robert Garrett, President of the Baltimore & Ohio Co., for \$50,000. This road is 5 miles in length, extending from Annapolis, Md., to Bay Ridge, and the sale includes the property at Bay Ridge, where the company is building up a summer resort.

Atchison, Topeka & Santa Fe.—New extensions of this company's branch lines in Kansas are reported as follows: On the Larned Branch, from Larned west to Burdett, 23 miles; on the Little River Branch, from Little River northwest to Hollywood, 25 miles; on the Mulvane Extension, from Mulvane west to Norwich, 24 miles; on the Independence Branch, from Independence southwest 41 miles; on the Chanute Branch, from Chanute west to Fredonia, 25 miles; on the Walnut Valley Branch, from Douglass south to Winfield, 18 miles. A portion of this track has been reported before, the distances above giving the total amount of track laid up to date of the latest report.

Baltimore & Ohio.—This company has contracted for the building of a steam ferry-boat to transfer passenger trains across Baltimore Harbor from Locust Point to Canton. The new boat is to be ready in time for the opening of the company's line through to New York early next year. The company is making active preparations for the opening of that line, and is putting the new Philadelphia Division in first-class condition. The transfer ferry will be used for the New York business until arrangements are completed for the new entrance of that division into Baltimore.

It is stated that negotiations are in progress for the extension of the Baltimore & Ohio express line over the lines controlled and operated by the Cincinnati, New Orleans & Texas Pacific Co., and the agreement will shortly take effect.

Belvidere Delaware.—Notice is given that the \$750,000 third mortgage bonds, which will mature in February next, will be extended for 30 years, with interest at the rate of 4 per cent. The present holders will be given the option of extending their bonds between Dec. 1 and Jan. 1 next. All bonds not extended will be paid at maturity.

Boston & Lowell.—At the adjourned meeting in Boston, Nov. 6, the tellers reported that 26,138 votes had been cast in favor of approving the lease of the Central Massachusetts road, and only 115 against it. The lease was therefore declared approved and the meeting adjourned.

Buffalo, New York & Philadelphia.—The foreclosure suit came up before the Supreme Court in Buffalo, N. Y., Nov. 4. At the opening of the proceedings counsel for Mr. Cohen, of New York, moved that the case be dismissed, on the ground that the Court had no jurisdiction in the matter. This motion was set aside and the necessary evidence to prove the mortgage and the default was then introduced.

Buffalo, Rochester & Pittsburgh.—The New York Supreme Court has granted the application of William H. Armstrong for the appointment of a receiver for the Rochester & Pittsburgh Co. The road was sold over a year ago and was transferred to the Buffalo, Rochester & Pittsburgh Co. Stockholders who were opposed to the reorganization had a receiver appointed in Pennsylvania.

Canadian Pacific.—The statement for September and the nine months to Sept. 30 is as follows:

	September, 1886.	1885.	Nine months, 1886.	1885.
Gross earnings.....	\$955,963	\$823,487	\$7,036,786	\$5,907,379
Operating expenses.....	580,774	466,613	4,529,728	3,617,996
Net earnings.....	\$375,189	\$356,874	\$2,507,058	\$2,289,383

For the nine months the gross earnings increased \$1,129,407, or 19.1 per cent., and the expenses \$911,792, or 25.2 per cent., the result being a gain of \$217,675, or 9.5 per cent., in the net earnings.

Central, of Georgia.—As noted from time to time, rumors have been current for some time past of the extensive purchases of the stock of this road, which were generally reported to be in the interest of the Louisville & Nashville Co., although it has also been reported that the Richmond & Danville Co. was trying to secure control. President Raoul is reported as saying in a recent interview that the purchases of stock had been very much exaggerated by the reports and that nothing approaching a majority had been transferred on the books of the company. So far as he knew the controlling interest was still with the local stockholders.

Central Massachusetts.—At the adjourned special meeting in Boston, Nov. 6, the tellers reported that more than the majority of the stock had been voted in favor of the lease of the road to the Boston & Lowell Co., and that no votes had been cast against it. The lease was thereupon declared to be approved. The stockholders then voted to authorize the issue of \$2,000,000 in bonds to complete the main line, and \$1,000,000 to complete the branch to Holyoke, in accordance with the provision of the lease.

Central Pacific.—On the extension of the Oregon Division track is now laid to Sisson, Cal., 40 miles northward from the old terminus at Delta. No more track will be laid this year, but work on the grading will be continued in the tunnels and at other points as far as the weather will permit.

Charleston, Cincinnati & Chicago.—Grading is reported finished on this road from Rutherfordton, N. C., southward to Blacks, S. C., and the bridge work is being pushed as fast as possible. Tracklaying will be begun as soon as the steel rails are received.

Chicago, Burlington & Quincy.—The statement for September and the nine months to Sept. 30 is as follows:

	September, 1886.	1885.	Nine months, 1886.	1885.
Passengers.....	\$919,917	\$612,507	\$4,139,696	\$3,857,673
Freight.....	1,956,870	1,851,417	13,929,604	13,982,443
Mail, etc.....	148,700	146,320	1,258,363	1,210,024
Total.....	\$2,725,487	\$2,610,244	\$19,327,663	\$19,050,140
Expenses.....	1,131,244	1,143,203	10,191,187	10,600,404
Net.....	\$1,594,243	\$1,467,041	\$9,136,476	\$8,449,736

For the nine months the gross earnings increased \$276,723, or 1.5 per cent., and the expenses decreased \$409,217, or 3.9 per cent., the result being a gain in net earnings of \$685,940,

or 8.1 per cent. The increase in gross earnings was entirely in passenger and miscellaneous receipts, freight earnings showing a small decrease.

A company has been organized to build a branch from this company's line at Oxford, Neb., southward into Kansas, and also to build a branch through the Beaver and Sappa valleys in Nebraska.

Chicago, Kansas & Western.—A Chicago dispatch of Nov. 10 says: "Articles of incorporation were filed yesterday with the Secretary of State, at Springfield, by the Chicago, Kansas & Western Railroad Co., of Illinois, with its principal office at Chicago, and a capital stock of \$10,000,000. It is proposed to construct this road as follows: From a point in Hancock County, Ill., on the Mississippi River, opposite Fort Madison, Iowa, northeast to Chicago; also a branch from a point in Illinois, opposite Keokuk, Ia., to a point on the first named line not yet determined; also from a point on the main line in Knox County, Ill., to the eastern line of the state; also from a point on the second line named to Rock Island, Ill., and to a point on the Mississippi opposite Muscatine, Iowa; also from a point on the second line to a point on the Mississippi in Henderson County, Ill."

The incorporators are William B. Strong, Boston, Mass.; George R. Peck, Topeka, Kan.; Norman Williams, Charles S. Holt and Arthur Dana Wheeler, of Chicago. Mr. Strong is the President, and Mr. Peck the General Solicitor of the Santa Fe, and the other incorporators are also interested in that company. There can, therefore, be no doubt that this is the new road which the Atchison has been threatening to build between Chicago and Kansas City, and that it has definitely decided to at once build the new road."

Chicago, Milwaukee & St. Paul.—On the branch from Astor, Ia., on the Council Bluffs line, to Sioux City the grading is now nearly completed. Track has been laid from Sioux City, Ia., southeast, to the Monona County line, a distance of about 30 miles.

On the Kansas City Extension track is now laid for 20 miles southwest from Ottumwa, and the work is progressing steadily.

Chicago, Rock Island & Pacific.—It is announced that this company has agreed to lease the Des Moines & Fort Dodge road at a rental of 30 per cent. of the gross earnings and the guarantee of the interest on the bonds. The lease is to take effect Jan. 1 next.

Cincinnati & Westwood.—The Cincinnati *Times Star* says of this suburban line, which is 56 miles long: "The Cincinnati & Westwood narrow gauge is to be abandoned. The rails will be taken up and sold, together with all other property of the road, and there will be nothing left to remind of its existence but some tumble-down trestles. It is very unfortunate that such is the case. A great many have depended upon it for getting to and from the city and a number have purchased property along the route, solely because of the facilities afforded of more comfortable and rapid transit than that given by the bus line. The result of the abandonment will be the practical isolation of a beautiful section of country and the forcing of persons seeking suburban homes into other directions. However, the property has been operated at a loss for years, and the owners have concluded to sink no more money in it."

Columbus & Western.—This company has been advertising for bids, which will be received until Nov. 15, for the masonry work, three piers and two abutments, for the bridge over the Coosa River near Childersburg, Ala., and also for building two tunnels near Leeds, Ala., one to be 1,150 ft. long and the other 2,400 ft. long. This work is on the extension from Goodwater to Birmingham.

Cumberland, Moorefield & Southwestern Virginia.—This company has filed articles of incorporation in West Virginia to build a railroad from Moorefield, in Hardy County, through Hampshire and Mineral counties, to Cumberland, Md. The principal office is at Moorefield. Surveys are now being made for the line.

Delaware & Hudson Canal Co.—This company's statement for its leased lines in New York for the quarter ending Sept. 30 is as follows:

	Gross earnings.	Net earnings.	Surplus.
Albany & Susquehanna.....	\$896,242	\$378,259	\$131,083
N. Y. & Canada.....	297,289	108,176	39,813
Rens. & Saratoga.....	774,004	414,872	147,619
Total.....	\$1,967,535	\$901,307	\$318,515
Total, 1885.....	1,550,783	797,373	177,480
Increase.....	\$266,752	\$103,934	\$41,035
Per cent.....	17.2	13.0	14.8

The surplus above is the amount remaining after deducting all interest and rental charges from the net earnings.

Denver & Rio Grande.—The Bondholders' Committee gives notice that the United States Trust Co. will deliver on Nov. 15 against their certificates for first consols 7s and general mortgage bonds, the new 4 per cent. consols and orders upon the new company for the preferred stock, receivable therefor under the plan of reorganization.

Des Moines & Fort Dodge.—The following notice has been issued: "This company having agreed upon a lease to the Chicago, Rock Island & Pacific Railway Co. at a rental of 30 per cent. of the gross earnings, and a guarantee to be stamped upon the bonds by the lessee, agreeing to pay interest upon the first and extension bonds at the rate of 4 per cent., and upon the income bonds at 2½ per cent. per annum, also to advance the money to pay the deferred interest scrip now outstanding; therefore, in order to consummate the lease before January, 1887, when the first interest will be paid thereunder, and in view of the fact that this company can otherwise only pay 8 per cent. on its first mortgage and extension bonds and nothing upon its income bonds, it is necessary to have forthwith the assent of the holders of all the bonds."

"The holders of two-thirds of the bonds have already assented."

"The holders of the remainder are requested to call at the office of the President, Charles E. Whitehead, Esq., 61 Wall street, New York, to give their assent to this plan as soon as possible."

The road extends from Des Moines, Ia., to Fort Dodge, 88 miles, with an extension from Tara to Ruthven, 55 miles. The funded debt includes \$1,300,000 firsts, \$672,000 extension bonds, and \$1,200,000 incomes. The amount of interest guaranteed by the lessee is thus \$104,880 yearly. The gross earnings last year were \$382,430; the net earnings, \$120,420.

Duluth, South Shore & Atlantic.—Several engineering parties are already locating the line of this road. The company having purchased the Detroit, Mackinac & Marquette and secured a controlling interest in the Marquette, Houghton & Ontonagon road has two sections of line to build to complete its projected line. The first section is from Sage, on the Detroit, Mackinac & Marquette, to the Sault Ste. Marie, a distance of about 40 miles. The other section is from Sturgeon, Mich., on the Marquette, Houghton & Ontonagon, to Duluth, a distance of about 190 miles. It is said that the line will not run through Ashland, but will pass

some 12 or 15 miles south of that place and will reach it by a branch. The contractors, Brown, Howard & Co., have agreed to have the road in operation by Nov. 30 of next year, which will require the employment of a very large force.

Eastern.—At a meeting of the directors in Boston, Nov. 6, it was voted to issue \$3,150,000 in preferred stock, the object of this issue being to reduce the debt of the company below \$10,000,000. Under the agreement in bankruptcy by which the present certificates of indebtedness were issued, dividends upon the common stock can be resumed whenever the debt falls below \$10,000,000, and not until that time. As long as the debt is over \$10,000,000, any surplus earnings must be used in the purchase of certificates. A circular has been issued to the bondholders which states that the company will issue the new preferred stock, which is entitled to a dividend of 6 per cent., in exchange for an equal amount of certificates of indebtedness, provided that certificates to the amount named are tendered in exchange and deposited with the company's agents in Boston and London by noon of Nov. 23 next. Should a sufficient amount be deposited, the preferred stock will be delivered as soon as possible after that date. Should bonds in excess of the amount named be tendered, the exchange will be made *pro rata*. If a sufficient amount of bonds is not tendered to take up all of the preferred stock, the certificates will be returned and the bonds will not be issued. The original amount of the bonds or certificates issued was \$13,547,000. There have been canceled to date \$440,500, leaving \$13,106,500 now outstanding.

Easton & Bangor.—This company has filed articles of incorporation in Pennsylvania. The line will be about 20 miles in length, running from a point in or near Pen Argyl to a point in or near Wind Gap, and thence through Ashland or Stockertown along the Bushkill Valley to a point in or near Easton, and thence to a point of connection with the Lehigh Valley Railroad in Northampton County.

Eufaula & St. Andrews Bay.—This company has been incorporated in Alabama to build a railroad from Eufaula, southward, to St. Andrews Bay, on the Gulf. The headquarters are in Eufaula, and the capital stock is to be \$2,000,000.

Fairchild & Mississippi River.—The grading of this road is about completed from Fairchild, Wis., to Osseo, a distance of 15 miles. The track will not be laid this fall, owing to the delay in obtaining ties and rails.

Fayetteville & Little Rock.—Grading is now in progress on the section of this road from Fayetteville, Ark., southward to St. Paul, in Madison County, and a considerable amount of work has been done. The line is intended to run from Fayetteville to the city of Little Rock.

Fliat & Pere Marquette.—It is reported that this company will build a branch from Wayne Junction, Mich., to Detroit, a distance of about 18 miles. At present the company runs trains into Detroit over the Michigan Central tracks.

Florida Railway & Navigation Co.—A special meeting of the stockholders of this company is called, to be held in Fernandina, Fla., Dec. 3, to consider measures for the completion of the company's Southern Division from Withlacoochee, Fla., to Tampa Bay, and to authorize the sale or mortgage of the line for the purpose of raising money for construction.

Fort Worth & Denver City.—The statement for September and the eleven months of the fiscal year from Nov. 1 to Sept. 30 is as follows:

	September.	1885.	1886.	1885.
Earnings.....	\$42,250	\$39,677	\$361,770	\$404,916
Expenses.....	18,904	26,092	23,444	249,556
Net earnings.....	\$23,345	\$13,615	\$338,326	\$175,360

For the eleven months the gross earnings decreased \$43,146, or 10.6 per cent., and the expenses \$6,112, or 2.7 per cent.; the result being a decrease of \$37,034, or 21.1 per cent., in the net earnings.

Grand Rapids & Indiana.—Tracklaying is completed on the branch from Grand Rapids to Muskegon, a distance of 37 miles, and the road will shortly be opened for business. It is expected to add considerably to the lumber traffic of the road.

Grand Trunk.—The statement for September and the three months from July 1 to Sept. 30 is as follows:

	September.	1885.	1886.	1885.
Earnings.....	\$335,544	\$285,142	\$946,391	\$792,335
Expenses.....	210,068	207,621	64,785	605,502
Net earnings.....	\$119,476	\$277,521	\$303,606	\$187,433

For the three months the gross earnings increased \$153,456, or 19.2 per cent., and the expenses \$37,283, or 6.2 per cent.; the result being a gain in net earnings of \$116,173, or 62.1 per cent.

The report for the controlled lines west of Detroit for the three months as follows:

	Chl. & G. T.	1885.	1886.	1885.
Earnings.....	\$161,569	\$133,633	\$72,770	\$85,920
Expenses.....	122,186	115,205	43,653	43,405
Net earnings.....	\$39,383	\$18,428	\$29,117	\$42,515

The Chicago & Grand Trunk shows an increase of \$27,996, or 20.9 per cent., in gross earnings, and \$20,955, or 11.1 per cent., in net earnings. On the Detroit, Grand Haven & Milwaukee there was an increase of \$6,359, or 9.6 per cent., in gross earnings, and of \$6,201, or 27.7 per cent., in net earnings.

Green Pond, Walterboro & Branchville.—Grading is now nearly completed on this line from Branchville, S. C., on the South Carolina Railroad, southward to Walterboro, a distance of 29 miles. Tracklaying has been begun and 5 miles of rails are reported down.

Houston, East & West Texas.—The Commercial and Financial Chronicle says: "The Receiver has failed to provide the necessary funds for the payment of the coupon due Nov. 1 on the first mortgage bonds. No advice has been received here as to the cause of the default; it has been suggested that all available funds have been required to pay receiver's certificates, and friends of the property think that the coupon will shortly be paid. The amount required is \$47,000."

Indiana, Bloomington & Western.—A statement has just been issued by the Committee of Reorganization of this company giving reason by which they consider a foreclosure and reorganization has become necessary. The committee consists of F. P. Olcott, Francis O. French, Dumont Clarke, J. R. Maxwell and J. J. Farrell. The members were selected by holders of large amounts of bonds and stock of the company, and were approved by the board of directors. They submit two plans—the first for an independent reorganization and the second in case of the consummation of the proposed consolidation with the Ohio companies. The first plan provides for the issue of \$10,000,000 common stock, \$3,325,000 preferred stock, \$8,000,000

first mortgage bonds and \$2,000,000 second mortgage bonds, both at 5 per cent. interest. The old first and second mortgage bonds of the company will receive par in the respective issues of the new company, and the accrued interest will be paid at the rate of 5 per cent. per annum in cash. The income bonds will have 70 per cent. of their face value in new preferred stock, and stockholders will receive share for share in the stock of the new company on the payment of a cash assessment of 7 per cent., payable in two installments.

If a consolidation with the Cincinnati, Sandusky & Cleveland and the Columbus, Springfield & Cincinnati is finally consummated, a first consolidated mortgage of \$12,500,000 will be issued, \$8,000,000 of which will be applied in lieu of the first mortgage bonds provided for in the first plan, \$3,690,000 to take up the present issues of bonds and preferred stock of the Ohio companies, and \$810,000 for the compromise of claims against the present company; \$2,000,000 consolidated mortgage bonds in place of the second mortgage provided for in the first plan, \$8,000,000 preferred stock to take up the common stock of the Ohio companies and retire the present income bonds and \$10,000,000 common stock, as provided for in the first plan. Securities are to be deposited with the Central Trust Co. in New York. The committee are assured that the counsel for the trustees' creditors and the company are prepared to agree upon the sale at once, upon the assent of the requisite amount of bonds.

Lehigh Valley.—The old report that this company was interested in the Pittsburgh, Seaboard & Western project and would build a line under the charter of that company from Ashland, Pa., to Pittsburgh, has been revived. This report has been frequently denied and does not seem to be any more probable now than heretofore. It is also reported that the company is making arrangements to build a line of its own from a point near Metuchen, N. J., to Jersey City, using the bed of the Morris Canal, which it leases, as an entrance into that city and the canal basin as a terminal station.

Little Rock & Fort Smith.—The land sales for September were 1,835 acres for \$5,892. For the nine months to Sept. 30 the total sales were 21,840 acres for \$70,093, against 19,301 acres for \$69,769 in the corresponding period last year. The average price was \$3.21 per acre, against \$3.61 last year.

Louisville & Nashville.—The statement for September and the three months of the fiscal year from July 1 to Sept. 30 is as follows:

	September.	1885.	1886.	1885.
Earnings.....	\$1,258,191	\$1,148,213	\$3,718,532	\$3,284,341
Expenses.....	731,618	683,561	2,140,166	2,057,461
Net earnings.....	\$526,573	\$464,652	\$1,578,366	\$1,226,880

Expenditures for construction and improvements this year were \$44,474 for September and \$104,903 for the three months, leaving net balances of \$482,099 for the month and \$1,473,463 for the quarter.

For the three months the gross earnings increased \$434,191, or 13.2 per cent., and the expenses \$82,705, or 4.0 per cent., the result being a gain of \$351,486, or 28.6 per cent., in the net earnings.

Marietta & North Georgia.—The suit of James T. Harrison to restrain the Governor and the Treasurer of the State of Georgia from turning over to this company the bonds held by the State, came up before the Superior Court in Atlanta last week, when the Court refused to make the temporary injunction permanent, holding that it had no jurisdiction in the case.

Mason City & Fort Dodge.—The contractors, Messrs. Henry & Balch, of Minneapolis, Minn., completed the work of laying rails on this road Oct. 30, thereby securing the local subsidies which were voted on condition that the line should be in operation by Nov. 1. The first passenger train was run over the road Oct. 31. It extends from Mason City, Ia., through Eagle Grove and Lehigh, to Fort Dodge, a distance of about 70 miles. It is intended chiefly as a coal road, passing through extensive coal-fields at Lehigh and other points.

Michigan, Indiana & St. Louis.—At the annual meeting of this company in Elkhart, Ind., Nov. 5, the stockholders voted to approve a contract for the construction of the road from Battle Creek, Mich., to Danville, Ill. The contractors are Chicago parties, who agree to begin work early in the spring and who take their pay in the securities to be issued by the company.

Michigan & Ohio.—The sale of this road under foreclosure is noted elsewhere. It will be remembered that by the plan of reorganization submitted to the bondholders some time ago the new company to be organized by the purchasers was to issue preferred stock in place of the present bonds, and was to place a new mortgage on the road for the purpose of building an extension northward into the lumber regions of Michigan. It is now understood that the negotiations have been resumed for the purchase of the Chicago & West Michigan road and that, in any event, the managers have decided not to build the projected line, provided they can secure control of some line already in operation.

Minneapolis & Pacific.—It is stated that the grading of this road is now substantially finished from Minneapolis, Minn., to Lidgerwood, in Ramsey County, Dak., a distance of 218 miles. In all 150 miles of track have been laid, and tracklaying is now in progress from three different points.

Minneapolis, Sault Ste. Marie & Atlantic.—It is stated that the work of construction on this road will be pushed as fast as possible hereafter, the object being to complete the road through to the Sault Ste. Marie, if possible, in advance of the Duluth, South Shore & Atlantic road.

The track is now laid to Bradley, Wis., on the T. Mahawk River, in Lincoln County, 123 miles from the western terminus at Turtle Lake. The grading is completed to the crossing of the Milwaukee, Lake Shore & Western, at Rhinelander, 18 miles further, and tracklaying is now in progress.

Mississippi Railroad Commission.—Mr. Frank S. Bond, as Receiver of the Vicksburg & Meridian Railroad, has filed a petition in the United States Court asking that the passenger and freight tariff as fixed for that road by the Railroad Commission be set aside and that the road be allowed to return to its former tariffs. The petition claims that the rates fixed for the road by the Commission are unreasonably low and unfair, and that the road is not able to earn a sufficient amount under that tariff to pay its liabilities. An answer has been filed by the Commission, stating that the rates which it prescribed are reasonable, and that it has due authority in the case from the Legislature of the state.

Missouri Central.—It is reported that a contract for building this line has been let to parties who agree to take the first securities and build and equip the road. In accordance with this contract a first mortgage for \$11,000,000 on the projected line has been executed and recorded. The line is to run from St. Louis to Kansas City, on a line between the Missouri Pacific and the Western Division of the Wabash.

Missouri Pacific.—The grading is now well advanced on the branch from Paola, Mo., to Kansas City, and track is reported laid from Paola northward 15 miles.

The new Council Grove, Osage City & Ottawa Branch is now completed to Admire, Kan., 18 miles beyond the late terminus at Osage City and 48 miles from the junction with the main line.

The Dallas & Greenville Branch of the Missouri, Kansas & Texas Division has been completed from Greenville, Tex., southward to Rockwall, 31 miles, and regular trains have been put on this section. Tracklaying has been suspended for the present, as there is a good deal of bridging and trestle-work to be done through the bottoms of the East Fork of the Trinity.

Newport News & Mississippi Valley Co.—General Traffic Manager John Muir announces that arrangements have been made for a new trans-Atlantic steamship line between Newport News, Va., and Liverpool. The first steamer will sail about Dec. 10, and the departures will be semi-monthly thereafter.

New York City & Northern.—The statement to the New York Commission for the quarter ending Sept. 30 is as follows:

	1886.	1885.	Inc. or Dec.	P. c.
Earnings.....	\$162,660	\$130,201	\$32,459	24.9
Expenses.....	115,378	95,143	20,235	21.3
Net earnings.....	\$47,282	\$35,058	\$12,224	34.9
Fixed charges.....	63,895	79,432	15,537	19.5
Deficit.....	\$16,613	\$44,374	\$27,761	39.9

The fixed charges include interest and rentals accruing, whether actually paid or not.

New York & Greenwood Lake.—This road, which has been for some time controlled by the New York, Lake Erie & Western Co., will be from Nov. 1 operated direct by that company. The road extends from the junction with the Erie, just west of the Bergen tunnel, to Greenwood Lake, a distance of 41 miles, and has a branch 4 miles in length to Orange, N. J., and 2 miles to Ringwood. It has never been a very prosperous line, having just about earned its running expenses for several years past.

Northern Pacific.—At a recent meeting in New York the board of directors authorized the immediate construction of new branches in Montana as follows: From Helena to Marysville, 12½ miles; from Drummond to Phillipsburg, 26 miles; from Missoula to Cornwallis, 50 miles. These are three of the branch lines recommended by General Manager Oakes in his last annual report. Surveys for all of them have been made and the location completed.

At latest accounts the heading at the east end of the big tunnel on the Cascade Division was in 1,100 ft. and the west end 850 ft. The headings are progressing at the rate of about 15 ft. a day.

The branch from Rathdrum to Coeur d'Alene, Idaho, a distance of 13 miles, is completed and opened for business. Grading has been in progress on another branch, from Wardner Junction up the South Fork, which will reach another section of the Coeur d'Alene mining region.

On the new Duluth & Maritoba Branch grading is completed for 30 miles northward from the junction with the main line at Hawley, Minn., and track is reported laid for 20 miles.

Ogdensburg & Lake Champlain.—The statement to the New York Commission for the quarter ending Sept. 30 is as follows:

	1886.	1885.	Increase.	P. c.
Earnings.....	\$203,571	\$159,701	\$43,870	27.4
Expenses.....	111,012	76,365	34,647	45.7
Net earnings.....	\$92,559	\$83,336	\$9,223	10.9
Other receipts.....	6,180	4,137	2,043	49.8
Total.....	\$98,739	\$87,473	\$11,266	12.7
Charges.....	62,612	50,834	11,778	23.2
Surplus.....	\$36,127	\$36,639	\$512	1.4

Charges include interest, taxes and rentals paid. The increase in expenses was largely due to renewals and improvements of road.

Ohio & Mississippi.—The statement for September and the nine months to Sept. 30 is as follows:

	September.	1885.	1886.	1885.
Earnings.....	\$393,261	\$344,618	\$2,837,510	\$2,669,144
Expenses.....	245,477	221,978	1,971,493	1,971,493
Net earnings.....	\$147,784	\$122,640	\$866,017	\$727,700
Per cent. of exps.....	37.4	54.4	43.9	36.3

For the nine months the gross earnings increased \$138,366, or 5.1 per cent., and the expenses \$40,055, or 2.0 per cent.; the result being a gain of \$98,311, or 13.5 per cent., in the net earnings.

Ohio River.—Track on this road is now laid to a point 44 miles northward from Point Pleasant, W. Va., leaving about 35 miles to be laid to reach Parkersburg. Tracklaying is also in progress from Parkersburg southward.

Orange Belt.—This road was completed to Oakland, Fla., on the south shore of Lake Apopka, on Oct. 30. A mixed train is now running over the road, but about Nov. 13 a regular passenger and freight schedule will be adopted. The road extends from Monroe, on the Jacksonville, Tampa & Key West road, to Oakland, 40 miles. The stations on the line are Sylvan Lake, Paola, Island Lake, Glen Ethel, Longwood Junction, Longwood, Altamonte, Forest City, Lakeville, Miller, Crown Point and Oakland.

Orangeburg & Lewiedale.—This company has been organized to build a railroad from Orangeburg, S. C., on the South Carolina Railroad, to Lewiedale, a distance of about 20 miles. Surveys for the road are now in progress.

Oregon Improvement Co.—The statement for September and the ten months of the fiscal year from Dec. 1 to Sept. 30 is as follows:

	September.	1885.	1886.	1885.
Earnings.....	\$286,568	\$244,496	\$1,355,832	\$2,337,291
Expenses.....	194,395	189,569	1,767,118	1,866,711
Net earnings.....	\$92,173	\$54,927	\$588,714	\$470,580

For the ten months the gross earnings increased \$18,541, or 0.8 per cent., and the expenses decreased \$99,593, or 5.3 per cent.; the result being a gain of \$118,134, or 25.1 per cent., in net earnings.

Oregon Pacific.—Work on the Montana Division of this road from Corvallis, Ore., has been discontinued for the winter, an early fall of snow having driven the graders away.

Oregon Railway & Navigation Co.—On the extension of the Centerville Branch track is now laid to Weston, Ore., 9 miles beyond the late terminus at Centerville and 26 miles from Pendleton. About 5 miles of track remain to be laid between Weston and Blue Mountain, this section waiting the completion of a long and high trestle over Dry Creek. When

completed this branch will form a cross-cut from Pendleton to Walla Walla about 50 miles in length.

The statement for September and the three months of the fiscal year from July 1 to Sept. 30 is as follows:

	September 1886.	Three months 1886.	September 1885.	Three months 1885.
Earnings.....	\$556,006	\$577,560	\$1,437,968	\$1,426,894
Expenses.....	252,702	268,296	755,431	702,936

Net earnings.....\$303,244 \$310,634 \$682,537 \$723,958
For the three months the gross earnings increased \$11,074, or 0.8 per cent., and the expenses \$52,495, or 7.5 per cent.; the result being a decrease of \$41,421, or 5.8 per cent., in the net earnings.

It is announced that the directors, at a meeting held Nov. 5, approved a sale of \$5,000,000 of the new 5 per cent. consolidated bonds to a syndicate of bankers at 105. The proceeds of the new bonds are to be used to pay off the \$5,000,000 in 7 per cent. bonds which will fall due in April next, these bonds being thus refunded with a reduction of 2 per cent. in interest.

Pennsylvania.—Mr. John Tyler, who was sent over by some of the English stockholders to confer with the directors of this company in relation to a division of the surplus, has held several conferences with President Roberts, without any result. Mr. Tyler therefore issued an invitation to the American stockholders to meet him for consultation on the evening of Nov. 5. In response to this invitation a number of stockholders appeared, when Mr. Tyler made an address, finding considerable fault with the present management, and urging a division of the surplus in pursuance with the plan proposed in London, and also urging that the entire net earnings should be devoted to dividends, and that no part of them should be used for the improvements of the road. There was some discussion among a few of the stockholders present, but nothing further was done. It does not appear that there were any of the large stockholders present at the meeting.

Philadelphia & Reading.—A Philadelphia dispatch of Nov. 10 says: "An important conference took place today at the office of the Philadelphia & Reading Railroad Co. between President Roberts and Vice-President Thomson, of the Pennsylvania Railroad Co., and President Corbin and Receiver Keim, of the Reading. The object of the conference, which lasted during the afternoon, was to establish more peaceful relations between the two companies. President Corbin, it was stated, recognized the fact that the Pennsylvania Railroad Co. had a line in the Schuylkill Valley, and he supposed that it was there to get tonnage. President Roberts assured the Reading representatives that the Pennsylvania Railroad Co. had no intention to be aggressive as long as it was possible to maintain peaceable relations."

Piedmont & Cumberland.—The grading of this line is now nearly completed and tracklaying is in progress. It is expected that the road will be completed in December. It will extend from Keyser, W. Va., to Cumberland Md., a distance of 28 miles. It is an extension of the West Virginia Central & Pittsburgh road and will be operated by that company.

Port Jervis & Monticello.—The sale of this road under foreclosure is noted elsewhere. It is announced that the new owners are Peter F. Farnum and O. P. Howell, of Port Jervis, and Henry R. Low, of Middletown, N. Y. They are now owners of the stockholders' interest, subject to the first mortgage on the road. They announce that they will put the road in good condition and will extend it from the present terminus at Monticello to a connection with the New York, Ontario & Western at Fallsburg, a distance of 6 miles, thereby giving Port Jervis a new railroad connection.

Portland & Willamette Valley.—This road is now completed from Dundee, Ore., the northern terminus of the Oregonian Railway, northward to Elk Rock, a distance of 24 miles. The line is the extension of the Oregonian Railway to Portland. At present the connection is made between Elk Rock and the city of Portland by steamboat on the Willamette River, but the road is to be extended into the city, a distance of about 5 miles.

Rome & Carrollton.—The final location of the line from Cedartown, Ga., to Carrollton is now in progress under charge of Chief Engineer John Postell. The contract has been let to Mr. Daniel Callahan, who is preparing to begin work as soon as the location is completed.

St. Louis & San Francisco.—It is reported that this company has sold on advantageous terms the entire issue of first mortgage bonds on its Kansas & Southwestern Branch. These bonds are issued at the rate of \$15,000 per mile on the line from Arkansas City to Caldwell, the total being \$800,000. The bonds are guaranteed by this company, which leases and operates the road.

St. Paul & Duluth.—Suit has been begun in the United States Circuit Court of Minnesota, by certain holders of common stock, to restrain the company from expending the surplus earnings in improvements of the road, and to compel it to apply those earnings to the payments of dividends on the common stock. The complaint sets forth that for some time past the earnings have been considerably in excess of the amount required to pay the dividends on the preferred stock, but that the directors have applied such earnings to payment for unnecessary improvements of the road. It is charged that some \$400,000 has been so expended during the past year, which is sufficient to pay a dividend of 5 per cent.

Sanford & Lake Eustis.—Grading is now well advanced on this road from Sanford, Fla., west to Tavares, and track is reported laid from Sanford west 15 miles.

Securities on the New York Stock Exchange.—The following securities have been placed on the lists by the Governing Committee:

Dakota & Great Southern, \$1,000,000 first-mortgage 5 per cent. bonds.

Detroit, Bay City & Alpena, \$550,000 additional first-mortgage bonds.

Valley of Ohio, \$700,000 additional consolidated bonds.

Sebasticonk & Moosehead Lake.—Tracklaying is completed on this road and it will be opened for business shortly. It extends from Pittsfield, Me., on the Maine Central, northward to Hartland, 13 miles. It has been built entirely from stock subscriptions and the company has no debt.

Sonora.—The statement for August and the eight months to Aug. 31 is as follows:

	August 1886.	Eight months 1886.	August 1885.	Eight months 1885.
Earnings.....	\$16,858	\$22,079	\$178,067	\$197,594
Expenses.....	36,173	22,528	171,045	139,392
Net earnings.....	\$19,315	\$45,557	\$7,022	\$58,202

*Deficit.

These earnings are in Mexican currency. The road is owned by the Atchison, Topeka & Santa Fe Co. The loss this year was due to heavy wash-outs in the latter part of July, which not only decreased the earnings, but caused a large increase in expenses on account of repairs.

Toledo & Central.—The statement for September and the nine months to Sept. 30 is as follows:

	September.	Nine months.
Earnings.....	\$80,446	\$572,744
Expenses.....	56,083	414,783

Net earnings.....\$24,363 \$157,961
For September the gross earnings increased \$15,058, or 24.1 per cent., and the expenses decreased \$131, or 0.3 per cent., leaving a gain in net earnings of \$15,789, or 183.6 per cent. No comparison is made for the year.

Toledo, St. Louis & Kansas City.—A dispatch from Cleveland, O., Nov. 6, says: "In the United States Circuit Court to-day Judges Jackson and Welker rendered a decision in the case of the Central Trust Co. of New York against Stephen H. Kneeland, representing respectively the terminal and the main line mortgage-holders of the Toledo, Delphos & Burlington Railway. The Court held that the Toledo & Grand Rapids Railroad is subject to the terminal mortgage, as that line was not transferred as a corporation until after the terminal mortgage was placed. All other terminal facilities in Toledo are held to be subject to the main-line mortgage alone. The plaintiff, therefore, only secures a claim upon a part of the road, along Washington street in Toledo."

Tonawanda Valley & Cuba.—The running of trains over this road on the 29 miles between Sandusky, N. Y., and Cuba was discontinued Oct. 30. A mixed train is still run over the 30 miles between Attica and Sandusky.

It is stated that the bondholders will shortly begin proceedings to foreclose the mortgage on the road.

Union Pacific.—The statement for September and the nine months to Sept. 30 is as follows:

	September 1886.	September 1885.	September 1886.	September 1885.
Miles worked.....	4,531	4,427	4,526	4,484

Earnings.....\$2,517,792 \$2,460,919 \$19,153,669 \$18,272,913
Expenses.....1,800,711 1,800,092 13,008,428 11,819,408

Net earnings.....\$911,081 \$1,160,827 \$6,145,241 \$6,453,205
Expenses include taxes. For the nine months the gross earnings increased \$881,056, or 4.8 per cent., and the expenses \$1,189,020, or 10.1 per cent., the result being a decrease of \$307,964, or 4.8 per cent., in the net earnings.

Wabash, St. Louis & Pacific.—It is reported that the Purchasing Committee has succeeded in making a compromise with the parties who brought suit for the appointment of a separate receiver for the Chicago Division, and that the application will be withdrawn.

Wilmington & Weldon.—The engineering corps of this company is now completing the location of the Wilson cut-off from the present terminus at Fayetteville, N. C., to the junction with the Wilmington, Columbia & Augusta road. The line, it is stated, will run from Fayetteville to Moss Neck, and thence to the Pee Dee River. The junction will be made, probably, near the Pee Dee River crossing.

Youngstown & Beaver River.—This company has filed articles of incorporation in Ohio to build a railroad from Youngstown, O., southeast, to the Pennsylvania state line. From that point it will be continued by the Wampum & State Line Co., already organized, to a junction with the Pittsburgh, Ft. Wayne & Chicago road at Wampum. The new line from Youngstown to Wampum will be about 27 miles long, and is intended as a short line to Pittsburgh for the Ashtabula & Pittsburgh road. It will have better grades than the present line and will be used mainly for coal and ore traffic.

Zanesville & Ohio River.—Track on this road is reported laid from Zanesville, O., southward along the Muskingum River to Malta, opposite McConnellsville. The distance is 27 miles.

ANNUAL REPORTS

The following is an index to the annual reports of railroad companies which have been reviewed in previous numbers of the current volume of the Railroad Gazette:

Page.	Page.
Alabama Great Southern..... 423	Louisiana Western..... 770
Ala., N. O., Tex. & Pac. Junc. 423	Louisville & Nashville..... 505, 714
Allegheny Valley..... 588	Louisville, N. Albany & Chi..... 255
Alliance, Miles & Ash..... 651	Maine Central..... 48
American, Preston & Lump..... 492	Manchester & Lawrence..... 414
Ashtabula & Pittsburg..... 632	Marquette, Houghton & Ont..... 414
Ashtabula, Top & Santa Fe..... 392	Massillon & Cleveland..... 651
Atlanta & West Point..... 570	Memphis & Charleston..... 570
Atlanta, N. Carolina..... 455	Mexican Central..... 486
Atlantic & Pacific..... 594	Michigan Central..... 23, 343
B. & O. Employees' Relief Ass'n..... 345	Michigan & Ohio..... 588
Baltimore & Annapolis..... 15	Mil. L. & Ke Shore & Western..... 151
Bay View, L. Trav. & Mackin..... 652	Minnesota & Northwestern..... 518
Boston & Albany..... 750	Mississippi & Tennessee..... 120
Boston & Lowell..... 15	Missouri, Kansas & Texas..... 369
Boston & Maine..... 155	Missouri Pacific..... 366
Boston & Providence..... 15	Mobile & Girard..... 492
Boston, Revere Beach & Lynn..... 760	Montreal & Wells River..... 493
Buffalo, N. Y. & Philadelphia..... 16	Morgan's L. & Texas..... 770
Burr, Cedar Rapids & No..... 622	Nashua & Lowell..... 414
Calumet, Vincennes & Chicago..... 518	Nashville, Chattanooga & W..... 634, 638
Canada & Atlantic..... 518	Natchez, Jackson & Col..... 104
Canadian Gov't Railroads..... 272	Naugatuck..... 26
Canadian Pacific..... 363	New Orleans & Northern..... 425
Carolina Central..... 386	New Castle & Beaver Valley..... 651
Central Pacific..... 469	New Haven & Northampton..... 208
Central Vermont..... 734	New London Northern..... 120
Charlotte, Col. & Augusta..... 155	New Orleans & Northern..... 425
Charlotte..... 155	N. Y. Central & Hudson River..... 69
Chesapeake & Dela. Canal..... 414	N. Y. Chicago & St. L..... 686
Chesapeake & Ohio..... 240	N. Y. & New England..... 16
Chesapeake, Ohio & W..... 74	N. Y. Haven & Hartford..... 23
Chesapeake, N. Y. & W..... 104	N. Y. Ontario & Western..... 86
Chicago & Alton..... 156	N. Y. Providence & Boston..... 25
Chi., Burlington & Quincy..... 292, 318	N. Y. Railroad Commission..... 33
Chi. & Eastern..... 714	N. Y. Susquehanna & W..... 654
Chi. & Grand Trunk..... 324, 719	N. Y. West Shore & Buffalo..... 68
Chi., Milwaukee & St. P..... 298, 294	Norfolk & Western..... 104, 635
Chi. & Northwestern..... 414, 545	Northern Central..... 156
Chi., Rock Island & Pac..... 385, 423	Northern Pacific..... 670, 905
Chi., St. P., Minn. & Omaha..... 326	Norwich & Worcester..... 120
Chi., St. L. & Pittsburgh..... 324	Northeastern (South Carolina)..... 414
Chi. & Western Indiana..... 455	Northern (New Hampshire)..... 414
Chi. & West Michigan..... 695	Northwestern Ohio..... 652
Cin. & Eastern..... 656	Ogdensburg & L. Champlain..... 551
Cin., Hamilton & Dayton..... 485	Ohio & Mississippi..... 174, 756
Cin., Ind., St. L. & Chi..... 588, 711	Old Colony..... 769
Cin. & Muskingum Valley..... 394, 622	Oregon Improvement Co..... 808
Cin., N. Orleans & Tex. Pacific..... 140	Oregon & Transcontinental Co..... 553
Cin., Richmond & Ft. Wayne..... 652	Pacific Mail Steamship Co..... 518
Cin. & Springfield..... 294	Panama..... 307
Cin., Wash. & Baltimore..... 518	Pennsylvania Company..... 651
Cle., Akron & Col..... 636	Pennsylvania & New York..... 651
Cleveland & Canton..... 192	Pennsylvania Railroad..... 175
Cleve., Col. Cin. & Ind..... 308	Peoria, Decatur & Evansville..... 192
Cleve., Lorain & Wheeling..... 652	Philadelphia & Reading..... 670
Cleve. & Pittsburgh..... 652	Phila., W. & Baltimore..... 307
Cleve., Youngstown & Pitts..... 632	Pittsburg, Cin. & St. L..... 394
Columbia & Greenville..... 174	Pittsburg, Cleve. & Toledo..... 698
Col., Hoising Vt. & Tol..... 192, 269	Pittsburg, Ft. Wayne & Chk..... 654
Columbus & Rome..... 770	Pittsburg & Lake Erie..... 68
Concord..... 367	Pittsburg Junction..... 48
Conn. & Passumpsic Rivers..... 632	Pitts., McK. & Youghiogheny..... 35
Consolidation Coal Co..... 139	Pitts., Wat. & Ky..... 394
Cumbria Valley..... 507	Portland & Ogdensburg..... 120
Del. & Hudson Canal Co..... 325	Providence & Worcester..... 120
Del., Lacka. & Western..... 156	Pullman's Palace Car Co..... 750
Denver & Rio Grande..... 138, 536	Richmond & Danville..... 367
Denver & Rio Grande Western..... 191	Richmond, Fred. & Potomac..... 36
Des Moines & Fort Dodge..... 291	Richmond & Pittsburgh..... 45
Des Moines & Western..... 156	Rome, Wat. & Ogdensburg..... 45
Detroit, Gd. Ha. & Mil..... 324, 618, 769	Rutland..... 493
Dublin & Wrights-Wile..... 255	St. Jo. & Grand Island..... 734
East St. L. & Carondelet..... 651	St. L. Alton & Terre Haute..... 588
East Tennessee, Vt. & Ga..... 695	St. L. Iron Mt. & So..... 367
Eliz., Lex. & Big Sandy..... 734	St. L. & San Francisco..... 192, 343, 380

Erie & Pittsburgh..... 651	St. L. Van. & Terre Haute..... 292
Evansville & Terre Haute..... 74	St. Paul & Duluth..... 155
Fitchburg..... 68	St. P., Minn. & Manitoba..... 504, 642
Ft. Wayne, Cin. & Louisville..... 307	Savannah, Fla. & Western..... 344
Fremont, Albion & Mo. Vt..... 355	Scioto Valley..... 587
Galveston, Har. & San Antonio..... 770	Shenandoah Valley..... 579
Galveston, Houston & Hen..... 367	Sioux City & Pacific..... 536
Georgia Pacific..... 272	South Carolina..... 208, 308
Georgia Railroad..... 714	Southern Pacific (Cal.)..... 696
Grand Rapids & Indiana..... 652	Southern Pacific Co..... 710
Grand Trunk..... 324, 769	Sou. Ry. & Steamship Ass'n..... 537
Gulf, Colorado & Santa Fe..... 454	Stewartstown..... 393
Hanover Junc. Han. & Gett'g..... 414	Terre Haute & Indianapolis..... 470
Housatonic..... 192	Terre Haute & Logansport..... 450
Houston & Texas Central..... 272	Texas & New Orleans..... 770
Huntingdon & Broad Top Mt..... 120	T. I., Ann Arbor & N. Mich..... 621
Illinois Central..... 374	Traverse City..... 652
Indiana, Bloom. & Western..... 750	Troy & Greenfield..... 224
Indianapolis & St. Louis..... 208	Union Pacific..... 250, 666
Indianapolis & Vincennes..... 652	Utica & Black River..... 272
International & Gt. No..... 367	Vicksburg & Meridian..... 652
Iron..... 493	Vicksburg, Shreveport & F..... 423
Jeff., Madison & Indianapolis..... 652	Virginia Midland..... 138
Kans. City, Ft. Scott & Gulf..... 414	Western Maryland..... 139
Kans. City, Springfield & Mem..... 425	Western North Carolina..... 192
Kansas City Union Depot Co..... 256	Western Union Telegraph Co..... 714
Kentucky Central..... 770	West Jersey..... 652
Kent. & Mich. So. 33, 323, 314	Wheeling & Lake Erie..... 608
Lawrence..... 651	Wilmington, Col. & Augusta..... 104
Lehigh Coal & Navigation Co..... 140	Wilmington & Weldon..... 104
Lehigh Valley..... 68, 224	Wisconsin Central..... 553
L. & W. Lakes-Barre Coal Co..... 139	Worcester, Nashua & Roch..... 192
Little Miami..... 394	Wrightsville & Tenuille..... 251
Little Rock & Ft. Smith..... 695	

New York & New England.

This company operates a line from Boston to the Hudson River, at Fishkill, N. Y., 228.56 miles (including 11.02 miles leased from the Newburg, Dutchess & Connecticut Co.), 108.93 miles of branches owned, and 54.08 leased; a total of 391.57 miles.

The company also leases the Norwich & Worcester road, 66.40 miles, but the operations of that line are reported separately and not included below.

The figures given below are from the report just made to the Massachusetts Railroad Commission for the year ending Sept. 30 last:

	1885-86.	1884-85.	Inc. or Dec.	P. c.
Common stock.....	\$20,000,000	\$20,000,000		
Preferred stock.....	1,900,000	1,900,000		
Funded debt.....	14,361,000	14,361,000		
Real estate liens.....	1,046,532	1,046,532		
Car trust debt.....	45,964	45,964		
Accounts and balances payable.....	570,910	570,910		

Total.....\$38,524,406

	1885-86.	1884-85.	Inc. or Dec.	P. c.
Road and property.....	\$36,882,204	\$36,882,204		
Materials.....	216,601	216,601		
Accounts receivable.....	420,564	420,564		
Cash.....	334,745	334,745		
Profit and loss, debit balance.....	670,292	670,292		

The funded debt includes \$6,000,000 first 7s; \$4,000,000 first 6s; \$3,363,000 second 6s and \$998,000 second 3s. The real estate debt is chiefly for the South Boston flats property.

Accounts payable include \$228,802 accrued interest; \$66,500 dividends on preferred stock; \$113 credit balances; and \$275,495 vouchers and accounts payable.

The earnings for the year were as follows:

	1885-86.	1884-85.	Inc. or Dec.	P. c.
Freight Department.....	\$2,262,470	\$1,839,989	\$422,481	22.9
Passenger Department.....	1,436,716	1,384,225	52,491	11.9
Miscellaneous.....	200,210	170,451	29,759	11.5

Total.....\$3,899,405 \$3,393,755 \$505,750 18.0

Expenses.....2,620,005 2,356,459 1. 264,146 10.4

Net earnings.....\$1,278,800 \$947,216 \$331,584 35.0

Gross earn. per mile.....9,958 8,437 1,521 18.0

Net.....3,266 2,418 847 35.0

Per cent. of exps.....67.2 71.3 4.1

Expenses include taxes, which were \$121,241 last year, against \$82,303 in the preceding year.

The earnings from local and through business (excluding mail, express and miscellaneous) were:

	Through.	Local.
Passenger.....	1885-86. 1884-85. 1885-86. 1884-85.	
Freight.....	\$368,462 \$322,357 \$921,144 \$811,516	
	1,530,772 1,194,879 731,706 645,420	

Total.....\$1,899,234 \$1,517,138 \$1,652,850 \$1,477,336

The greatest increase, it will be seen, was in through freight.

The result of the year was as follows:

	1885-86.	1884-85.	Inc. or Dec.	P. c.
Net earnings, as above.....	\$1,278,800	\$947,216	\$331,584	35.0
Rentals.....	\$60,935	\$60,935		
Interest accrued.....	1,067,087	1,067,087		
Dividends, 7 per cent. on preferred stock.....	135,000	135,000		
Old accounts charged off.....	1,318	1,318		

Balance, surplus for the year.....\$11,160

Debit balance, Oct. 1, 1885.....\$693,782

Premium, etc., received (\$68,975) less bad accounts charged off (\$50,535).....12,420

Debit balance, Sept. 30, 1886.....\$670,292

In 1884-85 the charges (not including dividends on preferred